

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 10,5 i1  
 Edition : 15.08.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113  
  
 Combination no. : 9 400 087 403  
  
 Injection pump  
 Pump designation : PES6P100A72QLS511  
 EP type number : 9 400 087 059  
 Governor  
 Governor design. : RQV350/840...900PA83  
 9  
 Governor no. : 9 420 080 233  
  
 Customer-spec. information  
 Customer : CATERPILLAR  
  
 Engine : 3306 DIT  
  
 1st version kW : 190.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
  
 Overflow valve : 9 401 087 348  
  
 Inlet press., bar : 2.00  
  
 Test nozzle holder  
 assembly : 1 688 901 017  
  
 Opening  
 pressure, bar : 207...210  
  
 Orifice plate  
 diameter mm : 0,6  
  
 Test lines : 1 680 750 008  
  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600  
  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 2...3

A01

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900  
 -----  
 Rack travel in mm : 12.80...12.90  
 -----  
 Del. quantity cm<sup>3</sup>/ : 18.2...18.4  
 -----  
 100 s: (18.0...18.7)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.4...6.6  
 Del. quantity cm<sup>3</sup>/ : 1.1...1.7  
 100 s: (0.8...1.9)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 950  
 travel mm : 8.50...8.60  
 2nd speed rpm : 350  
 travel mm : 0.50...1.50  
 3rd speed rpm : 500  
 travel mm : 2.40...2.60  
 4th speed rpm : 750  
 travel mm : 2.40...2.60  
 5th speed rpm : 850  
 travel mm : 4.00...4.50

### GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 925  
 Rack travel in mm : 15.20...17.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900

Del. quantity : 182.5...184.5  
1000 : (180.0...187.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

Remarks:  
:

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 11.80  
Speed rpm : 910...920  
2nd rack travel in: 4.00  
Speed rpm : 930...960  
4th rack travel in: 1050  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 350  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 770...830

#### START CUT-OUT

Speed 1/min : 290 (310)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 910...920

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)  
Rack travel in mm : 14.00...15.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.70...4.90

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 10,5 g9  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 410  
 Injection pump  
 Pump designation : PES6P100A720LS502  
 EP type number : 9 400 087 050  
 Governor  
 Governor design. : RQV350...950PA798-9  
 Governor no. : 9 420 080 269

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DIT

1st version kW : 125.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 9 401 087 214

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950  
 -----  
 Rack travel in mm : 9.40...9.50  
 -----  
 Del. quantity cm<sup>3</sup>/ : 9.8...10.0  
 -----  
 100 s: (9.6...10.2)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 6.2...6.4  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.8...1.7)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050  
 travel mm : 8.50...8.60  
 2nd speed rpm : 300  
 travel mm : 1.10...1.40  
 3rd speed rpm : 500  
 travel mm : 3.40...3.70  
 4th speed rpm : 700  
 travel mm : 5.20...5.50  
 5th speed rpm : 900  
 travel mm : 6.80...7.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1055  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 950

Del. quantity : 98.0...100.0  
1000 : (96.0...102.0)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 8.40  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack trave: 8.50  
Speed rpm : 350  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 330...400

#### TORQUE CONTROL

Dimension a mm : 0.70  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 600  
Rack travel in m: 10.10...10.20  
4th speed rpm : 800  
Rack travel in m: 9.70...9.90

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del. quantity cm3/ : 112.0...116.0  
1000 s: (108.0...116.0)  
Speed rpm : 800  
Del. quantity cm3/ : 106.0...110.0  
1000 s: (104.0...112.0)

#### BREAKAWAY

A04

1st version  
1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 980...990

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.00...5.20

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 g  
Edition : 15.08.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 9 400 087 412

Injection pump  
Pump designation : PES6P120A72ORS3228  
EP type number : 9 400 087 065  
Governor  
Governor design. : RQV350...1200PA863-7  
Governor no. : 9 420 080 270

Customer-spec. information  
Customer : FORD (FNH)

Engine : 7.8L TC

1st version kW : 138.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 9 401 087 403

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...29

Prestroke mm : 4.25...4.35  
: (4.20...4.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200  
-----  
Rack travel in mm : 13.80...13.90  
-----  
Del. quantity cm<sup>3</sup>/ : 14.0...14.2  
-----  
100 s: (13.8...14.4)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.7)  
-----

2nd speed rpm : 350.0  
Rack travel in mm : 7.8...8.0  
Del. quantity cm<sup>3</sup>/ : 2.2...2.6  
100 s: (1.9...2.8)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1360  
travel mm : 8.40...8.50  
2nd speed rpm : 1000  
travel mm : 5.50...5.90  
3rd speed rpm : 800  
travel mm : 4.40...4.80  
4th speed rpm : 500  
travel mm : 2.60...3.00  
5th speed rpm : 300  
travel mm : 0.90...1.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1490  
Rack travel in mm : 6.70...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 700

Del. quantity : 140.5...142.5  
1000 : (138.5...144.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 43...51

#### Testing:

1st rack travel in: 12.80  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1380...1410  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 350  
Rack travel in mm : 7.80...8.00

#### CONSTANT REGULATION

Speed rpm : 390...460

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 750  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 1050  
Rack travel in m: 13.80...13.90  
4th speed rpm : 900  
Rack travel in m: 14.10...14.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 14.10...14.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.00...12.20  
2nd pressure hPa : 325

A06

Rack travel in m: 12.60...12.70  
3rd pressure hPa : 415  
Rack travel in m: 13.40...13.80

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 121.0...125.0  
1000 s: (119.0...127.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 71.0...75.0  
1000 s: (69.0...77.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 12.80  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.80...8.00  
Del. quantity cm<sup>3</sup>/ : 22.0...26.0  
1000 s: (19.5...28.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

:  
Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 10\_5g10  
 Edition : 15.08.89  
 Replaces :  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 415  
 Injection pump  
 Pump designation : PES6P100A72QLS502  
 EP type number : 9 400 087 050  
 Governor  
 Governor design. : RQV350...950PA798-9  
 Governor no. : 9 420 080 269

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DIT

1st version kW : 125.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 9 401 087 214

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950  
 -----  
 Rack travel in mm : 9.40...9.50  
 -----  
 Del. quantity cm<sup>3</sup>/ : 9.8...10.0  
 -----  
 100 s: (9.6...10.2)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 6.2...6.4  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.8...1.7)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050  
 travel mm : 8.50...8.60  
 2nd speed rpm : 300  
 travel mm : 1.10...1.40  
 3rd speed rpm : 500  
 travel mm : 3.40...3.70  
 4th speed rpm : 700  
 travel mm : 5.20...5.50  
 5th speed rpm : 900  
 travel mm : 6.80...7.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1055  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 950

Del. quantity : 98.0...100.0  
1000 : (96.0...102.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 8.40  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 350  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 330...400

#### TORQUE CONTROL

Dimension a mm : 0.70  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 600  
Rack travel in m: 10.10...10.20  
4th speed rpm : 800  
Rack travel in m: 9.70...9.90

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 112.0...116.0  
1000 s: (108.0...116.0)  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 106.0...110.0  
1000 s: (104.0...112.0)

#### BREAKAWAY

A08

1st version  
1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 980...990

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.00...5.20

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 8,3 k 6  
Edition : 01.08.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 230 005  
  
Injection pump  
Pump designation : PES6A95D42OLS2551  
Governor  
Governor design. : RSV375...1050A2G2034  
R

Customer-spec. information  
Customer : CASE

Engine : A 504 BDT

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 9 681 273 009  
  
Inlet press., bar : 1.5  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 9 681 230 706  
  
Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,20...2,30  
                  : (2,15...2,35)  
Rack travel in mm : 10,50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
-----  
Rack travel in mm : 13,30...13,40  
-----  
Del. quantity cm<sup>3</sup>/ : 11,3...11,5  
-----  
100 s: (11,1...11,7)  
-----  
Spread cm<sup>3</sup> : 0,35  
-----  
100 s: (0,6)  
-----  
2nd speed rpm : 375  
Rack travel in mm : 7,90...8,10  
Del. quantity cm<sup>3</sup>/ : 1,7...2,1  
-----  
100 s: (-)  
-----  
Spread cm<sup>3</sup> : 0,35  
100 s: (0,55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del. quantity : 113,0...115,0  
1000 : (111,0...117,0)  
Spread cm<sup>3</sup> : 3,5  
1000 : (6,0)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 12,30  
Speed rpm : 1090...1100  
2nd rack travel in: 4,00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.20...1.40

LOW IDLE 1  
Control lever

position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 8.00  
Speed rpm : 375  
Rack travel in mm : 7.90...8.10  
Rack travel in mm : 2.00  
Speed rpm : 505...565

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.30...13.40  
2nd speed rpm : 425  
Rack travel in m: 14.00...14.60

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 133.0...147.0  
1000 s: (130.0...150.0)

#### LOW IDLE

Speed rpm : 375  
Del. quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.5...23.5)

#### Remarks:

Start-of-delivery mark is at start of  
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAS 8,3 k 5  
 Edition : 6.7.88  
 Replaces : 26.2.87  
 Test oil : ISO-4113

Combination no. : 9 400 230 005

Injection pump  
 Pump designation : PES6A95D420LS2551  
 Governor  
 Governor design. : RSV372...1070A2B2034  
 R

Customer-spec. information  
 Customer : CASE

Engine : A-504 BD

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : WS 187P

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 9 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 705

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)  
 Rack travel in mm : 13.35  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050  
 -----  
 Rack travel in mm : 13.35  
 -----  
 Del. quantity cm<sup>3</sup>/ : 11.3...11.5  
 -----  
 100 s : (-)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (-)  
 -----  
 2nd speed rpm : 375  
 Rack travel in mm : 8.10  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del. quantity : 113.0...115.0  
 1000 : (111.0...117.0)  
 Spread cm<sup>3</sup> : 3.0  
 1000 : (-)

RATED SPEED

1st version  
 Control lever  
 position degrees: 48...56

Testing:  
 1st rack travel in: 12.25  
 Speed rpm : 1090...1100  
 2nd rack travel in: 6.90  
 Speed rpm : 1170...1200  
 3rd rack travel in: 2.00  
 Speed rpm : 1205...1235

LOW IDLE 1

Control lever  
 position degrees: 27...35  
 Setting point w/out bumper spring  
 Speed rpm : 375  
 Rack travel in mm : 8.15

Testing:

Speed rpm : 150  
Minimum rack trave: 19.00  
Speed rpm : 375  
Rack travel in mm : 8.10...8.20  
Rack travel in mm : 3.00  
Speed rpm : 530...570

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 425  
Rack travel in m: 14.50...14.60

START CUT-OUT

Speed 1/min : 190

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 113.0...117.0  
1000 s: (111.0...119.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.25  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1185  
Rack travel in mm : 6.80...7.00

LOW IDLE

Speed rpm : 375  
Del. quantity cm<sup>3</sup>/ : 16.0...22.0  
1000 s: (-)

Remarks:

: CASE NO. A-151333

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 6,6 c 1  
 Edition : 28.07.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 230 009

Injection pump  
 Pump designation : PES6A100D41ORS3031  
 Governor  
 Governor design. : RSV400...1050A2B2046  
 DL

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6404 A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 413 385 007

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10  
 : (1,95...2,15)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11,05...11,15

Del. quantity cm<sup>3</sup>/ : 11,4...11,6  
 100 s : (11,2...11,8)

Spread cm<sup>3</sup> : 0,3  
 100 s : (-)

2nd speed rpm : 400  
 Rack travel in mm : 6,50  
 Del. quantity cm<sup>3</sup>/ : 1,3...1,7  
 100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del. quantity : 114,3...116,3  
 1000 : (112,3...118,3)  
 Spread cm<sup>3</sup> : 3,0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 38...46

Testing:  
 1st rack travel in: 10,10  
 Speed rpm : 1095...1105  
 2nd rack travel in: 5,00  
 Speed rpm : 1150

## LOW IDLE 1

Control lever  
 position degrees: 17...25  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 6,50

Testing:

Speed rpm : 100  
Minimum rack travel: 19,00  
Speed rpm : 400  
Rack travel in mm : 6,60  
Rack travel in mm : 2,00  
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11,05  
2nd speed rpm : 900  
Rack travel in m: 11,15...11,35  
3rd speed rpm : 750  
Rack travel in m: 11,95...12,05

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 800  
Pressure hPa : 760  
Rack travel mm : 11.05...11.15

Measurement

Speed 1/min : 800

1st pressure hPa : 420  
Rack travel in m: 9.00...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 122,0...125,0  
1000 s: (120,0...127,0)

Aneroid pressure h: -  
Speed rpm : 550  
Del. quantity cm<sup>3</sup>/ : 49,2...55,2  
1000 s: (47,2...57,2)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10,05  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100

A14

Del. quantity cm<sup>3</sup>/ : 155,0...185,0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1150  
Del. quantity cm<sup>3</sup>/ : 21,8...31,8  
1000 s: (-)

LOW IDLE

Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 12,7...16,7  
1000 s: (-)

Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 m  
Edition : 6.7.88  
Replaces : 7.86  
Test oil : ISO-4113  
  
Combination no. : 9 400 230 022  
  
Injection pump  
Pump designation : PES6A1000410RS3032  
Governor  
Governor design. : RSV400...1100A2B2086

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466T

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 413 385 007

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 1,95...2,05  
                  : (1,90...2,10)  
Rack travel in mm : 21,00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
-----  
Rack travel in mm : 11,45  
-----  
Del. quantity cm<sup>3</sup>/ : 10,9...11,1  
-----  
100 s: (-)  
-----  
Spread cm<sup>3</sup> : 0,3  
-----  
100 s: (-)  
-----

2nd speed rpm : 400  
Rack travel in mm : 6,80  
Del. quantity cm<sup>3</sup>/ : 1,3...1,7  
100 s: (-)  
Spread cm<sup>3</sup> : 0,4

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0,3...1,0

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200  
Del. quantity : 109,0...111,0  
1000 : (-)  
Spread cm<sup>3</sup> : 3.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 35...43

Testing:  
1st rack travel in: 10,45  
Speed rpm : 1145...1155  
2nd rack travel in: 4,00  
Speed rpm : 1195...1225  
4th rack travel in: 1250  
Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever  
position degrees: 14...20  
Setting point w/out bumper spring

Speed rpm : 400  
Rack travel in mm : 6,30

#### Testing:

Speed rpm : 100  
Minimum rack travel : 19,00  
Speed rpm : 400  
Rack travel in mm : 6,70...6,90  
Rack travel in mm : 2,00  
Speed rpm : 460...520  
Speed rpm : 600  
Maximum rack travel : 1,00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100  
Rack travel in m: 11,40...11,50  
2nd speed rpm : 1000  
Rack travel in m: 11,35...11,65  
3rd speed rpm : 750  
Rack travel in m: 12,75...12,95

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting

Speed rpm : 500  
Pressure hPa : 420  
Rack travel mm : 12,75...12,85

#### Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11,10...11,50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 126,0...129,0  
1000 s: (-)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 78,5...81,5  
1000 s: (-)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.45  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 172.0...192.0  
1000 s: (-)

#### HIGH IDLE

#### 1st version

Speed rpm : 1200  
Rack travel in mm : 5.60  
Del.quantity cm<sup>3</sup>/ : 27.0...37.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (-)

#### Remarks:

: JOHN DEERE NO.  
: AR 94029

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 c 8  
Edition : 01.08.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 230 041  
  
Injection pump  
Pump designation : PES6A95D41ORS2522  
Governor  
Governor design. : RSV400...1100A2C2009  
-1L

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 TL-09

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 000  
  
Inlet press., bar : 1.5  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 1 680 750 008  
  
Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 1,85...1,95  
: (1,80...2,00)  
Rack travel in mm : 9,00...12,00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
-----  
Rack travel in mm : 9,60...9,70  
-----  
Del. quantity cm<sup>3</sup>/ : 8,9...9,1  
-----  
100 s: (8,7...9,3)  
-----  
Spread cm<sup>3</sup> : 0,35  
-----  
100 s: (0,6)  
-----  
2nd speed rpm : 400  
Rack travel in mm : 5,60...5,80  
Del. quantity cm<sup>3</sup>/ : 1,2...1,6  
100 s: (-)  
Spread cm<sup>3</sup> : 0,35  
100 s: (0,55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 700  
Del. quantity : 89,0...91,0  
1000 : (87,0...93,0)  
Spread cm<sup>3</sup> : 3,5  
1000 : (6,0)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 8,60  
Speed rpm : 1145...1155  
2nd rack travel in: 4,00  
Speed rpm : 1195...1225  
3rd rack travel in: 0,30...1,40  
Speed rpm : 1500

## LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5,10...5,30

Testing:  
Speed rpm : 100  
Minimum rack travel: 19,00  
Speed rpm : 400  
Rack travel in mm : 5,60...5,80  
Rack travel in mm : 2,00  
Speed rpm : 495...555

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9,60...9,70  
2nd speed rpm : 750  
Rack travel in m: 10,60...10,80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 240  
Rack travel mm : 10.25...10.35

Measurement  
Speed 1/min : 500

1st pressure hPa : 140  
Rack travel in m: 9.65...10.05  
2nd pressure hPa : -  
Rack travel in m: 9.50...9.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 99,0...103,0  
1000 s: (97,0...105,0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (72,0...80,0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,60  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160,0...174,0  
1000 s: (157,0...177,0)  
Rack travel in mm : 21,00

#### HIGH IDLE

1st version  
Speed rpm : 1200  
Del. quantity cm<sup>3</sup>/ : 19,0...27,0  
1000 s: (18,0...28,0)

#### LOW IDLE

Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 12,0...16,0  
1000 s: (9,5...18,5)

Remarks:  
Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 c 4  
 Edition : 15.06.88  
 Replaces : 6.11.87  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 045  
 Injection pump  
 Pump designation : PES6A95D410RS2522-1  
 EP type number : 9 410 230 017  
 Governor  
 Governor design. : RSV425...1100A2C2161  
 L  
 Governor no. : 9 420 234 140

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 106.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95  
 : (1.80...2.00)

Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.00...9.10

Del. quantity cm<sup>3</sup>/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 500

Del. quantity : 86.5...88.5

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.00

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1185...1195

4th rack travel in: 1300

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.00...9.10  
2nd speed rpm : 650  
Rack travel in m: 10.40...10.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.20...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : 100  
Rack travel in m: 10.30...10.40  
2nd pressure hPa : 149  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 500  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 100.5...105.5  
1000 s: (98.5...108.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (87.0...95.0)

#### BREAKAWAY

1st version

A20

1mm rack travel less than

full load rack tr: 8.00  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 19.00...21.00

#### HIGH IDLE

#### 1st version

Speed rpm : 1180  
Rack travel in mm : 5.30...5.50

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Del. quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: JOHN DEERE NO.  
: RE 23750

Setting without torque-control spring  
retainer with 1 mm control-rod travel  
less. Raising of full-load delivery  
with torque-control spring retainer to  
9,0 mm control-rod travel.

Start-of-delivery mark 16° cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAS 8,3 h 1  
 Edition : 20.6.88  
 Replaces : 7.86  
 Test oil : ISO-4113

Combination no. : 9 400 230 058

Injection pump  
 Pump designation : PES6A95D320LS2647  
 Governor  
 Governor design. : RSV400...1100A2B2172  
 -R

Cust. part no. : A 156989

Customer-spec. information  
 Customer : CASE

Engine : A 504 BDT

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 9 681 273 009

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 175

Test lines : 9 681 230 706

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Rack travel in mm : 10.50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0-60-120-180-240-300  
 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.80

Del. quantity cm<sup>3</sup>/ : 10.20...10.40

Spread cm<sup>3</sup> : 0.35

100 s : (0.60)

2nd speed rpm : 400  
 Rack travel in mm : 5.20  
 Del. quantity cm<sup>3</sup>/ : 1.80...2.20  
 Spread cm<sup>3</sup> : 0.35  
 100 s : (0.55)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: LOSE  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 102.50...104.50  
 1000 : (100.5...106.5)

RATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 8.80  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1185...1215  
 4th rack travel in: 1300  
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
 position degrees: 20...28  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 4.70

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.80  
2nd speed rpm : 750  
Rack travel in m: 10.55...10.75  
3rd speed rpm : 600  
Rack travel in m: 10.95...11.05

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 110.00...114.00  
1000 s: (108.5...116.5)

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.00...150.00  
1000 s: (137.0...153.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 H1  
 Edition : 14.6.88  
 Replaces : 7.86  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 066  
 Injection pump  
 Pump designation : PES6A1000410RS2676  
 Governor  
 Governor design. : RSV425...1100A2B2161  
 -1L

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 T

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
 x Wall thickness : 6.00x2.00x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,45...2,55  
 : (2,40...2,60)  
 Rack travel in mm : 10,50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0,50 (0,75) 0-60-120-180-240-300

BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 9,4  
 -----  
 Del. quantity cm<sup>3</sup>/ : 9,90...10,10  
 -----  
 Spread cm<sup>3</sup> : 0,35  
 -----  
 100 s: (0,60)  
 -----  
 2nd speed rpm : 425  
 Rack travel in mm : 5,6  
 Del. quantity cm<sup>3</sup>/ : 2,10...2,50  
 Spread cm<sup>3</sup> : 0,35  
 100 s: (0,55)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: LOSE  
 Speed rpm : 800  
 Rack travel in mm : 0,30...1,00

Governor spring pre-tension  
 Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 600  
 Del. quantity : 99,00...101,00  
 1000 : (97,00...103,00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 8,40  
 Speed rpm : 1145...1155  
 2nd rack travel in: 4,00  
 Speed rpm : 1195...1225  
 3rd rack travel in: 0,30...1,70  
 Speed rpm : 1300

LOW IDLE 1

Control lever  
 position degrees: 22...30  
 Setting point w/out bumper spring  
 Speed rpm : 425  
 Rack travel in mm : 5,00...5,20

Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 425  
Rack travel in mm : 5,50...5,70  
Rack travel in mm : 2,00  
Speed rpm : 600...660

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100  
Rack travel in m: 9,40  
2nd speed rpm : 750  
Rack travel in m: 10,60...10,80

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 170  
Rack travel mm : 10,25...10,35

Measurement

Speed 1/min : 500

1st pressure hPa : 80  
Rack travel in m: 9,40...9,80  
2nd pressure hPa : 80  
Rack travel in m: 9,20

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600  
Speed rpm : 750  
Del.quantity cm3/ : 116,00...119,00  
1000 s: (113,50..121,50  
Speed rpm : 500  
Del.quantity cm3/ : 86,50...89,50  
1000 s: (84,00...92,00)

Remarks:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h 3
Edition : 20.6.88
Replaces : 7.86
Test oil : ISO-4113
Combination no. : 9 400 230 068
Injection pump
Pump designation : PES6A1000410RS2676-1
Governor
Governor design. : RSV450...1000A1B2186
-L

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466 A

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 413 009

Opening
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter
x Wall thickness
x Length mm : 6,00x2,00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 10.50
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

A25

Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 9.90...10.00
Del.quantity cm3/ : 10.50...10.70
Spread cm3 : 0.35
100 s: (0.60)
2nd speed rpm : 450
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 1.80...2.20
Spread cm3 : 0.35
100 s: (0.60)

GUIDE SLEEVE POSITION

Control-lever position
Degree: LOSE
Speed rpm : 800
Rack travel in mm : 0.30...1.000

Governor spring pre-tension
Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 105.00...107.00
1000 : (103.0...109.0)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 8.90
Speed rpm : 1045...1055
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.80

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 9.90...20.00  
2nd speed rpm : 700  
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 109.50...112.50  
1000 s: (107.0...115.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 h 4  
Edition : 20.6.88  
Replaces : 7.86  
Test oil : ISO-4113  
  
Combination no. : 9 400 230 068  
  
Injection pump  
Pump designation : PES6A1000410RS2676-1  
Governor  
Governor design. : RSV450...1000A1C2186  
-L

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 457 413 010  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 9 681 230 706  
  
Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.45...2.55  
: (2.40...2.60)  
Rack travel in mm : 10.50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)  
0-60-120-180-240-300

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
-----  
Rack travel in mm : 9.90...10.00  
-----  
Del. quantity cm<sup>3</sup>/ : 10.50...10.70  
-----  
Spread cm<sup>3</sup> : 0.35  
-----  
100 s: (0.60)  
-----  
2nd speed rpm : 450  
Rack travel in mm : 5.20...5.40  
Del. quantity cm<sup>3</sup>/ : 1.80...2.20  
Spread cm<sup>3</sup> : 0.35  
100 s: (0.60)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: LOSE  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : -

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del. quantity : 105.00...107.00  
1000 : (103.0...109.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

## Testing:

1st rack travel in: 8.90  
Speed rpm : 1045...1055  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 4.80

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 9.90...20.00  
2nd speed rpm : 700  
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 109.50...112.50  
1000 s: (107.0...115.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 9,0 d  
 Edition : 20.6.88  
 Replaces : 7.86  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 087  
 Injection pump  
 Pump designation : PES8A95D32ORS2708  
 Governor  
 Governor design. : RQV325...1400AB1213  
 -1R

Customer-spec. information  
 Customer : IHC

Engine : D9L

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 1 417 413 019

Inlet press., bar : 2.8

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 702

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 3.30...3.40  
 : (3.25...3.45)  
 Rack travel in mm : 10.50  
 Firing order : 1-8-7-3-6-5-4-2

Phasing : 0-45-90-135-180-225-  
 0-45-90-135-180-225-

Tolerance + - ° : 270-315  
 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400  
 -----  
 Rack travel in mm : 11.40...11.50  
 -----  
 Del. quantity cm<sup>3</sup>/ : 7.30...7.50  
 -----  
 Spread cm<sup>3</sup> : 0.35  
 -----  
 100 s : (0.60)  
 -----  
 2nd speed rpm : 350  
 Rack travel in mm : 6.70...6.90  
 Del. quantity cm<sup>3</sup>/ : 0.90...1.30  
 Spread cm<sup>3</sup> : 0.35  
 100 s : (0.55)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: MAX  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1400  
 Del. quantity : 73.00...75.00  
 1000 : (71.0...77.0)

RATED SPEED

1st version  
 Control lever  
 position degrees: 61.50...66.50

Testing:  
 1st rack travel in: 10.40  
 Speed rpm : 1450...1460  
 2nd rack travel in: 4.00  
 Speed rpm : 1555...1585  
 4th rack travel in: 1650  
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
 position degrees: 8...16

Testing:  
 Speed rpm : 100  
 Minimum rack travel: 8.00  
 Rack travel in mm : 2.00  
 Speed rpm : 640...700

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1400  
Rack travel in m: 11.75  
2nd speed rpm : 1200  
Rack travel in m: 11.90...12.10  
3rd speed rpm : 845  
Rack travel in m: 12.15...12.35

START CUT-OUT

Speed 1/min : 150...190

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 840  
Del. quantity cm<sup>3</sup>/ : 62.50...65.50  
1000 s: (60.00...68.00)

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : MIND.180  
1000 s: (MIND.175)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a72  
 Edition : 01.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 088  
 Injection pump  
 Pump designation : PES6A1000320/3RS2691  
 Governor  
 Governor design. : RSV425...1050A2C2190  
 -2R

Customer-spec. information  
 Customer : CDC

Engine : 6CT830

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.5  
 Test nozzle holder  
 assembly : 1 688 901 016  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,5  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,80...2,90  
 : (2,75...2,85)  
 Rack travel in mm : 10,50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050  
 -----  
 Rack travel in mm : 12,50...12,60  
 -----  
 Del. quantity cm<sup>3</sup>/ : 10,85...11,05  
 -----  
 100 s : (10,65...11,25)  
 -----  
 Spread cm<sup>3</sup> : 0,35  
 -----  
 100 s : (0,6)  
 -----  
 2nd speed rpm : 425  
 Rack travel in mm : 6,00...6,20  
 Del. quantity cm<sup>3</sup>/ : 1,6...2,0  
 100 s : (-)  
 Spread cm<sup>3</sup> : 0,35  
 100 s : (0,55)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del. quantity : 108,5...110,5  
 1000 : (106,5...112,5)  
 Spread cm<sup>3</sup> : 3,5  
 1000 : (6,0)

RATED SPEED

1st version  
 Control lever  
 position degrees: 37...45

Testing:  
 1st rack travel in: 11,50  
 Speed rpm : 1090...1100  
 2nd rack travel in: 4,00  
 Speed rpm : 1130...1160  
 3rd rack travel in: 4,00  
 Speed rpm : 1140...1170  
 4th rack travel in: 1200

Speed rpm : 0,30...1,40

#### LOW IDLE 1

Control lever

position degrees: 12...20

Setting point w/out bumper spring

Speed rpm : 425

Rack travel in mm : 5,50...5,70

#### Testing:

Speed rpm : 100

Minimum rack travel: 19,00

Speed rpm : 425

Rack travel in mm : 6,00...6,20

Rack travel in mm : 2,00

Speed rpm : 455...515

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11,50

Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 135,0

1000 s: ( 130,0)

Rack travel in mm : 21,00

#### LOW IDLE

Speed rpm : 425

Del. quantity cm<sup>3</sup>/ : 16,0...20,0

1000 s: (13,5...22,5)

#### Remarks:

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a71  
Edition : 28.07.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 237 095  
Injection pump  
Pump designation : PES6A1000320/3RS2691  
Governor  
Governor design. : RSV425...750A4C2213R

Customer-spec. information  
Customer : CDC

Engine : 6CT-830

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 047

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,5

Test lines : 9 681 271 029

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,80...2,90  
                  : (2,75...2,95)  
Rack travel in mm : 9,00...12,00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 13,80  
-----  
Del. quantity cm<sup>3</sup>/ : 12,05...12,25  
-----  
100 s : (11,85...12,45)  
-----  
Spread cm<sup>3</sup> : 0,35  
-----  
100 s : (0,6)  
-----

2nd speed rpm : 425  
Rack travel in mm : 5,90  
Del. quantity cm<sup>3</sup>/ : 1,40...1,80  
100 s : (-)  
Spread cm<sup>3</sup> : 0,35  
100 s : (0,55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del. quantity : 120,5...122,5  
1000 : (118,5...124,5)  
Spread cm<sup>3</sup> : 3,5  
1000 : (6,0)

## RATED SPEED

1st version  
Control lever  
position degrees: 31...39

Testing:  
1st rack travel in: 12,80  
Speed rpm : 775...785  
2nd rack travel in: 4,00  
Speed rpm : 800...830  
3rd rack travel in: 4,00  
Speed rpm : 805...835  
4th rack travel in: 860  
Speed rpm : 0,30...1,40

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 425

Rack travel in mm : 5,40

Testing:

Speed rpm : 100

Minimum rack trave: 19,00

Speed rpm : 425

Rack travel in mm : 5,80...6,00

Rack travel in mm : 2,00

Speed rpm : 455...515

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12,80

Speed rpm : 775...785

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 135,0

1000 s: ( 130,0)

Rack travel in mm : 21,00

LOW IDLE

Speed rpm : 425

Del. quantity cm<sup>3</sup>/ : 14,0...18,0

1000 s: (11,5...20,5)

Remarks:

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a 2  
 Edition : 14.6.88  
 Replaces : 4.3.87  
 Test oil : ISO-4113

Combination no. : 9 400 230 098

Injection pump  
 Pump designation : PES6A1000320/3RS2691  
 Governor  
 Governor design. : RSV425...1100A2C2190  
 -9R

Customer-spec. information  
 Customer : CUMMINS

Engine : 6CTA 8,3

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0.5

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 13,00...13,10  
 -----  
 Del. quantity cm<sup>3</sup>/ : 11.4...11.6  
 -----  
 100 s : (11.1...11.8)  
 -----  
 Spread cm<sup>3</sup> : 0.35  
 -----  
 100 s : (0.6)  
 -----

2nd speed rpm : 425  
 Rack travel in mm : 5,80...6,00  
 Del. quantity cm<sup>3</sup>/ : 1.30...1.70  
 100 s : (-)  
 Spread cm<sup>3</sup> : 0.35  
 100 s : (0.55)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 113.5...115.5  
 1000 : (111.5...117.5)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 38...46

Testing:  
 1st rack travel in: 12.00  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1190...1220  
 3rd rack travel in: 4.00  
 Speed rpm : 1200...1230  
 4th rack travel in: 1300  
 Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever  
 position degrees: 15...23  
 Setting point w/out bumper spring  
 Speed rpm : 425

Rack travel in mm : 5.40

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 470...530

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0  
1000 s: ( 130.0)  
Rack travel in mm : 21,00

LOW IDLE

Speed rpm : 425  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (10.5...19.5)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a70  
 Edition : 28.07.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 230 100

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 Governor  
 Governor design. : RSV425...1100A2C2190  
 -11R

Customer-spec. information  
 Customer : CDC

Engine : 6CT-830

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,80...2,90  
 : (2,75...2,95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

B09

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11,10...11,20

Del. quantity cm<sup>3</sup>/ : 8,4...8,6

100 s : (8,2...8,8)

Spread cm<sup>3</sup> : 0,35

100 s : (0,6)

2nd speed rpm : 425

Rack travel in mm : 5,90...6,10

Del. quantity cm<sup>3</sup>/ : 1,3...1,7

100 s : (-)

Spread cm<sup>3</sup> : 0,35

100 s : (0,55)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 84,0...86,0

1000 : (82,0...88,0)

Spread cm<sup>3</sup> : 3,5

1000 : (6,0)

## RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10,10

Speed rpm : 1140...1150

2nd rack travel in: 4,00

Speed rpm : 1180...1210

3rd rack travel in: +4,00

Speed rpm : 1195...1225

4th rack travel in: 1300

Speed rpm : 0,30...1,40

#### LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 425

Rack travel in mm : 5,40...5,60

#### Testing:

Speed rpm : 100

Minimum rack trave: 19,00

Speed rpm : 425

Rack travel in mm : 5,90...6,10

Rack travel in mm : 2,00

Speed rpm : 475...535

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10,10

Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 135,0

1000 s: ( 130,0)

Rack travel in mm : 21,00

#### LOW IDLE

Speed rpm : 425

Del.quantity cm<sup>3</sup>/ : 13,0...17,0

1000 s: (10,5...19,5)

#### Remarks:

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a61  
Edition : 07.04.89  
Replaces : 2.5.89  
Test oil : ISO-4113

Combination no. : 9 400 230 110

Injection pump  
Pump designation : PES6A100D320/3RS2691  
-4  
EP type number : 9 410 230 030  
Governor  
Governor design. : RSV450...1100AOC2190  
-42R  
Governor no. : 0 420 233 248

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_

## BEGINNING OF DELIVERY

B11

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.10...12.20

Del. quantity cm<sup>3</sup>/ : 11.8...12.0

100 s : (11.6...12.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 118.5...120.5

1000 : (116.5...122.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.30

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 500...560

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 133.0...137.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.70...5.90

Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C. # 3911542  
Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a62  
 Edition : 07.04.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113

Combination no. : 9 400 230 111

Injection pump  
 Pump designation : PES6A1000320/3RS2691  
 -4  
 EP type number : 9 410 230 030  
 Governor  
 Governor design. : RSV450...1100A0C2190  
 -40R  
 Governor no. : 0 420 233 246

Customer-spec. information

Customer : C.D.C.

Engine : 6CT830

1st version kW : 134.2

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

BEGINNING OF DELIVERY

B13

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
3rd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 31...39  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 750  
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 110.5...114.5  
1000 s: (108.5...116.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450

B14

Rack travel in mm : 5.70...5.90  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C. # 3911545

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 8,3 a10  
 Edition : 07.04.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113

Combination no. : 9 400 230 115

Injection pump  
 Pump designation : PES6A1000320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100A0C2190  
 -24R  
 Governor no. : 9 420 234 178

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 9 680 271 029

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1250  
 -----  
 Rack travel in mm : 10.90...11.00  
 -----  
 Del. quantity cm<sup>3</sup>/ : 9.9...10.1  
 -----  
 100 s : (9.7...10.3)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.6)  
 -----

2nd speed rpm : 400.0  
 Rack travel in mm : 5.3...5.5  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.6  
 100 s : (0.9...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1250  
 Del. quantity : 99.0...101.0  
 1000 : (97.0...103.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

**RATED SPEED**

1st version  
 Control lever  
 position degrees: 51...59

Testing:  
 1st rack travel in: 9.90  
 Speed rpm : 1305...1315  
 2nd rack travel in: 4.00

Speed rpm : 1360...1390  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1305...1315

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Del. quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks: : C.D.C. # 3913329

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB 5,7 n 24  
Edition : 09.08.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 407 083 201  
Injection pump  
Pump designation : PES6A90D41ORS2293  
Governor  
Governor design. : RQV300...1425AB901L

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 352-A

### TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45  
Overflow valve : 1 417 413 000

Inlet press., bar : 1.0

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

### BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
                  : (2,10...2,30)  
Rack travel in mm : 9,00...12,00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

### BASIC SETTING

1st speed rpm : 1000  
-----  
Rack travel in mm : 9,00  
-----  
Del. quantity cm<sup>3</sup>/ : 4,5...5,0  
-----  
100 s : (-)  
-----  
Spread cm<sup>3</sup> : 0,4  
-----  
100 s : (-)  
-----  
2nd speed rpm : 200  
Rack travel in mm : 9,00  
Del. quantity cm<sup>3</sup>/ : 2,0...2,8  
100 s : (-)

### GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1420  
Rack travel in mm : 15.20...17.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1400  
Aneroid pressure h: 210  
Del. quantity : 68,0...70,0  
1000 : (66,0...72,0)

### RATED SPEED

1st version  
Control lever  
position degrees: 72...70

Testing:  
1st rack travel in: 17.70  
Speed rpm : 1415...1435  
2nd rack travel in: 13.70  
Speed rpm : 1490...1510  
3rd rack travel in: 1.50...8.00  
Speed rpm : 1650  
4th rack travel in: 1780  
Speed rpm : <0.00

### LOW IDLE 1

Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.60  
Speed rpm : 350  
Rack travel in mm : 4.00...6.00  
Rack travel in mm : 1.35

Speed rpm : 640...660

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 200

Rack travel mm : 9.00...9.10

Measurement

Speed 1/min : 500

1st pressure hPa : 110

Rack travel in m: 8.80...8.90

2nd pressure hPa : 66

Rack travel in m: 8.40...8.50

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 1400

Del. quantity cm<sup>3</sup>/ : 60,0...64,0

1000 s: (57,0...67,0)

#### BREAKAWAY

1st version

Speed rpm : 1445...1455

#### STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 13,70...14,30

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE 5.0 D1  
Edition : 21.08.89  
replaces : 02.84  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/11F1150 R92-1  
Type number : 0 460 416 033

Customer-specific information  
Customer : STEYER

Engine : WD 611.42

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 688 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800  
Setting value mm: 3.6...4.0

Supply-pump pressure:

Speed 1/min: 800  
Setting value bar: 5.4...6.0

Full-load del. w/out charge press.:

Speed 1/min : 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 65.0...66.0

Dispersion cm<sup>3</sup>/: -  
1000H.: 3.0

Low-idle speed regulation:

Speed 1/min: 300  
Del. quantity cm<sup>3</sup>/  
1000H.: 13.0...17.0  
Dispersion cm<sup>3</sup>/: 3.0  
1000H.: (3.5)

Full-load speed regulation:

Speed 1/min: 1230  
Del. quantity cm<sup>3</sup>/  
1000H.: 22.0...26.0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 70.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
TD travel mm: 0.5...1.4  
mm: (0.2...1.6)  
2nd speed 1/min: 800  
TD travel mm: 3.6...4.0  
mm: (3.1...4.5)  
3rd speed 1/min: 1150  
TD travel mm: 6.9...7.7  
mm: (6.6...8.0)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 4.0...4.6  
bar: (3.8...4.8)  
2nd speed 1/min: 800  
Supply-pump  
pressure bar: 5.4...6.0  
bar: (5.2...6.2)  
3rd speed 1/min: 1150  
Supply-pump  
pressure bar: 6.9...7.5  
bar: (6.7...7.7)

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1130

Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300  
Del.quantity cm<sup>3</sup>/: -  
1000H.: 0.0...2.6  
2nd speed 1/min: 1230  
Del.quantity cm<sup>3</sup>/: 22.0...26.0  
1000H.: (20.0...28.0)  
3rd speed 1/min: 1130  
Del.quantity cm<sup>3</sup>/: 65.0...68.0  
1000H.: (64.2...68.8)  
4th speed 1/min: 800  
Del.quantity cm<sup>3</sup>/: 57.5...60.5  
1000H.: (63.2...67.8)  
5th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 57.5...60.5  
1000H.: (56.5...61.5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150  
Del.quantity cm<sup>3</sup>/: 0-3  
1000H.: -

Idle delivery:

1st speed 1/min: 400  
Del.quantity cm<sup>3</sup>/: 0.0...2.6  
1000H.: -  
2nd speed 1/min: 350  
Del.quantity cm<sup>3</sup>/: 1.0...7.0  
1000H.: (0.0...8.0)  
3rd speed 1/min: 300  
Del.quantity cm<sup>3</sup>/: 13...17  
1000H.: (11...19)

Automatic starting fuel delivery:

1st speed 1/min: 170  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 105.0  
2nd speed 1/min: 250  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 55.0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : 5.2...5.4  
MS mm : 1.3...1.5  
SVS max. mm : 6.0

Remarks:

B20



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5.5 01  
Edition : 23.08.89  
replaces : 10.85  
Calibrating oil : ISO 4113  
Injection pump : VE 6/11F1250 R181-1  
Type number : 0 460 416 046

Customer-specific information  
Customer : IVECO-FIAT

Engine : 8065.05.290

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 020

Opening  
pressure bar : 172...175

Perforated-plate  
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000  
Setting value mm: 4.7...5.1

Supply-pump pressure:

Speed 1/min: 1000  
Setting value bar: 6.2...6.8

Full-load del. w/out charge press.:

Speed 1/min : 800

Del. quantity cm<sup>3</sup>/  
1000H.: 71.0...72.0  
Dispersion cm<sup>3</sup>/: 3.5  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 400  
Del. quantity cm<sup>3</sup>/  
1000H.: 20.0...24.0  
Dispersion cm<sup>3</sup>/: -  
1000H.: 3.5

Start:

Speed 1/min: 100  
Del. quantity : 100.0  
mind cm<sup>3</sup>/1000H.: -

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600  
TD travel mm: 0.9...1.7  
mm: (0.6...2.0)  
2nd speed 1/min: 1000  
TD travel mm: 4.7...5.1  
mm: (4.2...5.6)  
3rd speed 1/min: 1250  
TD travel mm: 5.3...6.1  
mm: (5.0...6.4)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 4.6...5.2  
2nd speed 1/min: 1000  
Supply-pump  
pressure bar: 6.2...6.8  
3rd speed 1/min: 1250  
Supply-pump  
pressure bar: 7.2...7.8

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1250  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1450

Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
2nd speed 1/min: 1380  
Del. quantity cm<sup>3</sup>/: 21.0...27.0  
1000H.: (18.0...30.0)  
3rd speed 1/min: 1330  
Del. quantity cm<sup>3</sup>/: 48.5...55.5  
1000H.: -  
4th speed 1/min: 1250  
Del. quantity cm<sup>3</sup>/: 64.0...67.0  
1000H.: (62.5...68.5)  
5th speed 1/min: 800  
Del. quantity cm<sup>3</sup>/: 71.0...72.0  
1000H.: (68.5...74.5)  
6th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 68.5...71.5  
1000H.: (67.0...73.0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 20...24  
1000H.: (18...26)  
2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 7.0...13.0  
1000H.: (6.0...14.0)  
3rd speed 1/min: 520  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 100.0  
2nd speed 1/min: 250  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H : 77.5

Shutoff electromagnet:

Cut-in  
min. voltage : 22.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm : 3.2...3.4

KF mm : 5.2...5.4  
MS mm : 1.5...1.7  
SVS max. mm : 4.3  
XK mm : 17.0...19.0  
XL mm : 13.5...16.9

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1.6 V1  
Edition : 18.08.89  
replaces : 12.82  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2000 R85  
Type number : 0 460 494 086

Customer-specific information  
Customer : VW

Engine : 068.5 INDUSTRIEMOTOR

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °: 40...48

Calibrating-oil  
return temp. °C  
with thermometer : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 2.9...3.3

Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 4.9...5.5

Full-load del. w/out charge press.:

Speed 1/min : 1500  
Del.quantity cm<sup>3</sup>/  
1000H.: 32.5...33.5  
Dispersion cm<sup>3</sup>/: 2.5  
1000H.: (3.0)

Low-idle speed regulation:

Speed 1/min: 425  
Del.quantity cm<sup>3</sup>/  
1000H.: 6.0...10.0  
Dispersion cm<sup>3</sup>/: 2.0  
1000H.: (3.0)

Full-load speed regulation:

Speed 1/min: 2050  
Del.quantity cm<sup>3</sup>/  
1000H.: 10.0...14.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 35.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
TD travel mm: 1.3...2.1  
mm: (1.0...2.4)  
2nd speed 1/min: 1500  
TD travel mm: 2.9...3.3  
mm: (2.4...3.8)  
3rd speed 1/min: 2000  
TD travel mm: 4.6...5.4  
mm: (4.3...5.7)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 2.8...3.4  
2nd speed 1/min: 1500  
Supply-pump  
pressure bar: 4.9...5.5  
3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 6.1...6.7

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)

2nd speed 1/min: 2000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2080  
Del.quantity cm<sup>3</sup>/: 0.0...6.0  
1000H.: -  
2nd speed 1/min: 2050  
Del.quantity cm<sup>3</sup>/: 10.0...14.0  
1000H.: (8.0...16.0)  
3rd speed 1/min: 2000  
Del.quantity cm<sup>3</sup>/: 29.0...31.0  
1000H.: (27.8...32.2)  
4th speed 1/min: 1500  
Del.quantity cm<sup>3</sup>/: 32.5...33.5  
1000H.: (30.8...35.2)  
5th speed 1/min: 600  
Del.quantity cm<sup>3</sup>/: 21.0...24.0  
1000H.: (19.5...25.5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425  
Del.quantity cm<sup>3</sup>/: 6.0...10.0  
1000H.: (4.0...12.0)  
2nd speed 1/min: 600  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 100  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 35.0  
2nd speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 35.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

B24

K	mm	: 3.2...3.4
KF	mm	: 5.7...5.9
MS	mm	: 1.2...1.4
SVS max.	mm	: 2.5
FH	mm	: 1.8...2.4
XK	mm	: 18.4...20.4
XL	mm	: 13.6...17.0

Remarks:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 V9  
Edition : 22.08.89  
replaces : 02.08.88  
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R138  
Type number : 0 460 494 131

Customer-specific information  
Customer : VW

Engine : 086-1.6L

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 2,9...3,3

Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 4,3...4,9

Full-load del. w/out charge press.:

Speed 1/min : 1500  
Del.quantity cm<sup>3</sup>/  
1000H.: 31,5...32,5  
Dispersion cm<sup>3</sup>/: 2,5  
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 475  
Del.quantity cm<sup>3</sup>/  
1000H.: 6,0...10,0  
Dispersion cm<sup>3</sup>/: 2,0  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2600  
Del.quantity cm<sup>3</sup>/  
1000H.: 12,0...16,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 35,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
TD travel mm: 1,3...2,1  
mm: (1,0...2,4)

2nd speed 1/min: 1500  
TD travel mm: 2,8...3,2  
mm: (2,4...3,8)

3rd speed 1/min: 2400  
TD travel mm: 5,8...6,6  
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 2,2...2,8  
2nd speed 1/min: 1500  
Supply-pump  
pressure bar: 4,3...4,9  
3rd speed 1/min: 2400  
Supply-pump  
pressure bar: 6,4...7,0

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 2400

Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -  
2nd speed 1/min: 2600  
Del. quantity cm<sup>3</sup>/: 12,0...16,0  
1000H.: (10,0...18,0)  
3rd speed 1/min: 2525  
Del. quantity cm<sup>3</sup>/: 18,5...28,5  
1000H.: (17,5...29,5)  
4th speed 1/min: 2400  
Del. quantity cm<sup>3</sup>/: 27,0...29,0  
1000H.: (25,8...30,2)  
5th speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/: 31,5...32,5  
1000H.: (29,8...34,2)  
6th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 21,0...24,0  
1000H.: (19,5...25,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 475  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 475  
Del. quantity cm<sup>3</sup>/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 650  
Del. quantity cm<sup>3</sup>/: 0,0...7,6  
1000H.: -  
3rd speed 1/min: 1200  
Del. quantity cm<sup>3</sup>/: 0,0...5,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H.: 18,0

2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H.: 23,5

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,1...3,5  
KF mm : 5,6...6,0  
MS mm : 1,2...1,6  
SVS max. mm : 2,3

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 W2  
Edition : 22.08.89  
replaces : 02.08.88  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2400 R138-1  
Type number : 0 460 494 140  
  
Customer-specific information  
Customer : VW  
  
Engine : 086-1.6L

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 000  
  
Opening  
pressure bar : 147...150  
  
Test inj. tubing : 1 680 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 2,9...3,3

Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 4,3...4,9

Full-load del. w/out charge press.:

Speed 1/min : 2400  
Del.quantity cm<sup>3</sup>/  
1000H.: 27,0...29,0  
Dispersion cm<sup>3</sup>/: 2,5  
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 450  
Del.quantity cm<sup>3</sup>/  
1000H.: 6,0...10,0  
Dispersion cm<sup>3</sup>/: 2,0  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2600  
Del.quantity cm<sup>3</sup>/  
1000H.: 12,0...16,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 35,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
TD travel mm: 1,3...2,1  
mm: (1,0...2,4)  
2nd speed 1/min: 1500  
TD travel mm: 2,9...3,3  
mm: (2,4...3,8)  
3rd speed 1/min: 2400  
TD travel mm: 6,1...6,9  
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 2,2...2,8  
2nd speed 1/min: 1500  
Supply-pump  
pressure bar: 4,3...4,9  
3rd speed 1/min: 2400  
Supply-pump  
pressure bar: 6,4...7,0

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 2400

Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -  
2nd speed 1/min: 2600  
Del. quantity cm<sup>3</sup>/: 12,0...16,0  
1000H.: (10,0...18,0)  
3rd speed 1/min: 2525  
Del. quantity cm<sup>3</sup>/: 18,5...28,5  
1000H.: (17,5...29,5)  
4th speed 1/min: 2400  
Del. quantity cm<sup>3</sup>/: 27,0...29,0  
1000H.: (25,8...30,2)  
5th speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/: 31,5...32,5  
1000H.: (29,8...34,2)  
6th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 21,5...24,5  
1000H.: (20,0...26,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2400  
Del. quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 450  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 650  
Del. quantity cm<sup>3</sup>/: 0,0...5,0  
1000H.: -  
3rd speed 1/min: 1200  
Del. quantity cm<sup>3</sup>/: 0,0...7,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 18,0  
2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H : 23,5

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,1...3,5  
KF mm : 5,6...6,0  
MS mm : 1,2...1,6  
SVS max. mm : 1,8

Remarks:



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2.0 K  
Edition : 22.08.89  
replaces : 02.04.87  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/9F2200 R153  
O 460 494 141

Customer-specific information  
Customer : RENAULT

Engine : J8S-709

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.3

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1400  
Charge press. hPa: 800  
Setting value mm: 4.0...4.4

Supply-pump pressure:

Speed 1/min: 1400  
Charge press. hPa: 800  
Setting value bar: 5.1...5.7

Full-load del. with charge press.:

Speed 1/min: 1400  
Charge press. hPa: 800

C01

Del. quantity cm<sup>3</sup>/  
1000H.: 47.0...48.0  
Dispersion cm<sup>3</sup>/ : 2.5  
1000H : (3.0)

Full-load del. w/out charge press.:

Speed 1/min : 600  
Del. quantity cm<sup>3</sup>/  
1000H.: 37.0...38.0

Low-idle speed regulation: —

Speed 1/min: 425  
Del. quantity cm<sup>3</sup>/  
1000H.: 7.0...11.0  
Dispersion cm<sup>3</sup>/ : 2.5  
1000H.: (3.0)

Full-load speed regulation:

Speed 1/min: 2400  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H: 23.0...29.0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 60.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 800  
TD travel mm: 1.9...2.7  
mm: (1.6...3.0)

2nd speed 1/min: 1400  
Charge press. hPa: 800  
TD travel mm: 4.0...4.4  
mm: (3.5...5.9)

3rd speed 1/min: 1800  
Charge press. hPa: 800  
TD travel mm: 5.7...6.5  
mm: (5.4...6.8)

4th speed 1/min: 2000  
Charge press. hPa: 800  
TD travel mm: 6.2...7.0  
mm: (5.9...7.3)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 800

Supply-pump  
pressure bar: 2.6...3.2  
2nd speed 1/min: 1400  
Charge press. hPa: 800  
Supply-pump  
pressure bar: 5.1...5.7  
3rd speed 1/min: 2000  
Charge press. hPa: 800  
Supply-pump  
pressure bar: 6.9...7.5

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 2000  
Charge press. hPa: 800  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700\*  
Charge-air pressure-setting  
point hPa: 200  
LDA stroke mm: 4.5  
Del. quantity cm<sup>3</sup>/: 41.0...42.0  
1000H.: (38.5...44.5)  
2nd speed 1/min: 2700  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 2500  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/: 2.5...17.5  
1000H.: -  
4th speed 1/min: 2400  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/: 23.0...29.0  
1000H.: (22.0...30.0)  
5th speed 1/min: 2000  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/: 43.9...45.9  
1000H.: (42.1...46.7)  
6th speed 1/min: 1400  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/: 47.0...48.0  
1000H.: (45.2...49.8)  
7th speed 1/min: 1000  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/: 45.4...48.4  
1000H.: (43.4...49.4)  
8th speed 1/min: 600  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 37.0...38.0  
1000H.: (34.5...40.5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 7.0...11.0  
1000H.: (5.0...13.0)  
2nd speed 1/min: 520  
Del. quantity cm<sup>3</sup>/: 3.0...7.0  
1000H.: (1.0...9.0)  
3rd speed 1/min: 660  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 180  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 40.0  
2nd speed 1/min: 300  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H : 40.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm : 3.2...3.4  
KF mm : 5.7...6.0  
MS mm : 1.4...1.6  
SVS max. mm : 3.6  
XK mm : 17.0...19.0  
XL mm : 10.3...13.7

Remarks:

\* Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2.0 K1  
Edition : 22.08.89  
replaces : 02.04.87  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2200 R153-1  
Type number : 0 460 494 156

Customer-specific information  
Customer : RENAULT

Engine : J8S-T1

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.3

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1400  
Charge press. hPa: 800  
Setting value mm: 4.0...4.4

Supply-pump pressure:

Speed 1/min: 1400  
Charge press. hPa: 800  
Setting value bar: 5.1...5.7

Full-load del. with charge press.:

Speed 1/min: 1400  
Charge press. hPa: 800

Del. quantity cm<sup>3</sup>/  
1000H.: 47.0...48.0  
Dispersion cm<sup>3</sup> : 2.5  
1000H : (3.0)

Full-load del. w/out charge press.:

Speed 1/min : 600  
Del. quantity cm<sup>3</sup>/  
1000H.: 37.0...38.0

Low-idle speed regulation:

Speed 1/min: 425  
Del. quantity cm<sup>3</sup>/  
1000H.: 7.0...11.0  
Dispersion cm<sup>3</sup> : 2.5  
1000H.: (3.0)

Full-load speed regulation:

Speed 1/min: 2400  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H: 23.0...29.0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 60.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 800  
TD travel mm: 1.9...2.7  
mm: (1.6...3.0)

2nd speed 1/min: 1400  
Charge press. hPa: 800  
TD travel mm: 4.0...4.4  
mm: (3.5...4.9)

3rd speed 1/min: 1800  
Charge press. hPa: 800  
TD travel mm: 5.7...6.5  
mm: (5.4...6.8)

4th speed 1/min: 2000  
Charge press. hPa: 800  
TD travel mm: 6.2...7.0  
mm: (5.9...7.3)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 800

Supply-pump pressure bar: 2.6...3.2  
 2nd speed 1/min: 1400  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 5.1...5.7  
 3rd speed 1/min: 2000  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 7.9...7.5

Overflow quantity at overflow valve:

1st speed 1/min: 600  
 Charge press. hPa: -  
 Overflow quantity cm<sup>3</sup>/10s: (41...83)  
 2nd speed 1/min: 2000  
 Charge press. hPa: 800  
 Overflow quantity cm<sup>3</sup>/10s: (55...138)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
 Charge-air pressure-setting point hPa: 200  
 LDA stroke mm: 4.5  
 Del. quantity cm<sup>3</sup>/1000H.: (41.0...42.0)  
 2nd speed 1/min: 2700  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: 0.0...3.0  
 3rd speed 1/min: 2500  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: 2.5...17.5  
 4th speed 1/min: 2400  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (23.0...29.0)  
 5th speed 1/min: 2000  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (43.9...45.9)  
 6th speed 1/min: 1400  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (47.0...48.0)  
 7th speed 1/min: 1000  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (45.4...48.4)  
 8th speed 1/min: 600  
 Charge press. hPa: -  
 Del. quantity cm<sup>3</sup>/1000H.: (37.0...38.0)

Zero delivery (stop):

C04

Electr. shutoff:

Speed 1/min: 350  
 ELAB volt: -  
 Del. quantity cm<sup>3</sup>/1000H.: 0.0...3.0  
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 425  
 Del. quantity cm<sup>3</sup>/1000H.: (7.0...11.0)  
 2nd speed 1/min: 520  
 Del. quantity cm<sup>3</sup>/1000H.: (3.0...7.0)  
 3rd speed 1/min: 660  
 Del. quantity cm<sup>3</sup>/1000H.: (0.0...3.0)

Automatic starting fuel delivery:

1st speed 1/min: 180  
 Del. quantity cm<sup>3</sup>/ind.: -  
 2nd speed 1/min: 300  
 Del. quantity cm<sup>3</sup>/ind.: -  
 max. 1000H.: 40.0

Shutoff electromagnet:

Cut-in min. voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
 K mm : 3.2...3.4  
 KF mm : 5.7...6.0  
 MS mm : 1.4...1.6  
 SVS max. mm : 3.6  
 XK mm : 17.0...19.0  
 XL mm : 10.3...13.7

Remarks:

\* Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,7 B  
Edition : 18.08.89  
replaces : 17.01.89  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2300 R54-1  
Type number : 0 460 494 244

Customer-specific information  
Customer : SEAT

Engine : X8/28

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC) : -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 5,1...5,7

Full-load del. w/out charge press.:

Speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/  
1000H.: 30,7...31,7  
Dispersion cm<sup>3</sup>/  
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 385  
Del. quantity cm<sup>3</sup>/  
1000H.: 8,0...12,0  
Dispersion cm<sup>3</sup>/  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2475  
Del. quantity cm<sup>3</sup>/  
1000H.: 10,0...14,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 48,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800  
TD travel mm: 1,7...2,5  
mm: (1,4...2,8)  
2nd speed 1/min: 1500  
TD travel mm: 4,3...4,7  
mm: (3,8...5,2)  
3rd speed 1/min: 2250  
TD travel mm: 7,0...7,8  
mm: (6,7...8,1)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 3,0...3,6  
2nd speed 1/min: 1500  
Supply-pump  
pressure bar: 5,1...5,7  
3rd speed 1/min: 2250  
Supply-pump  
pressure bar: 6,9...7,5

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 2250  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2625  
Del.quantity cm<sup>3</sup>/: 0,0...6,0  
1000H.: -  
2nd speed 1/min: 2475  
Del.quantity cm<sup>3</sup>/: 10.0...14.0  
1000H.: (8.0...16.0)  
3rd speed 1/min: 2400  
Del.quantity cm<sup>3</sup>/: 17,0...27,0  
1000H.: (16,0...28,0)  
4th speed 1/min: 2250  
Del.quantity cm<sup>3</sup>/: 24.7...26.7  
1000H.: (23.5...27.9)  
5th speed 1/min: 1500  
Del.quantity cm<sup>3</sup>/: 30.7...31.7  
1000H.: (29.0...33.4)  
6th speed 1/min: 600  
Del.quantity cm<sup>3</sup>/: 20.0...23.0  
1000H.: (18.5...24.5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 385  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 385  
Del.quantity cm<sup>3</sup>/: 8,0...12,0  
1000H.: (6,0...14,0)  
2nd speed 1/min: 575  
Del.quantity cm<sup>3</sup>/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 280  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 35,0  
2nd speed 1/min: 480  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 35,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4  
KF mm : 5,6...6,0  
MS mm : 1,6...2,0  
SVS max. mm : 3,7

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,5 A  
Edition : 31.08.89  
replaces : 18.11.88  
Calibrating oil : ISO 4113

Injection pump : VE 4/ 8F2600 R284  
Type number : 9 460 620 001  
Customer Part-No. : 8 944 68 5890

Customer-specific information  
Customer : ISUZU

Engine : 1,5 L 4EC1

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250  
Setting value mm: 2,7...3,1

Supply-pump pressure:

Speed 1/min: 1250  
Setting value bar: 3,4...4,0

Full-load del. w/out charge press.:

007

Speed 1/min : 1500  
Del.quantity cm<sup>3</sup>/  
1000H.: 30,9...31,9  
Dispersion cm<sup>3</sup>/: 2,5  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 400  
Del.quantity cm<sup>3</sup>/  
1000H.: 7,6...11,6  
Dispersion cm<sup>3</sup>/: 2,5  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2850  
Del.quantity cm<sup>3</sup>/  
1000H.: 12,9...18,9

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 45,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600  
TD travel mm: 0,1...0,9  
mm: (0,0...1,2)  
2nd speed 1/min: 1250  
TD travel mm: 2,7...3,1  
mm: (2,2...3,6)  
3rd speed 1/min: 1500  
TD travel mm: 3,9...4,5  
mm: (3,5...4,9)  
4th speed 1/min: 2000  
TD travel mm: 5,7...6,5  
mm: (5,4...6,8)  
5th speed 1/min: 2300  
TD travel mm: 7,0...7,8  
mm: (6,7...8,1)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 1,9...2,5  
2nd speed 1/min: 1250

Supply-pump pressure bar: 3,4...4,0  
3rd speed 1/min: 2000  
Supply-pump pressure bar: 5,2...5,8  
4th speed 1/min: 2300  
Supply-pump pressure bar: 6,0...6,6

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 2600  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2975  
Del. quantity cm<sup>3</sup>/: 0,0...6,0  
1000H.: -  
2nd speed 1/min: 2850  
Del. quantity cm<sup>3</sup>/: 12,9...18,9  
1000H.: (11,9...19,9)  
3rd speed 1/min: 2600  
Del. quantity cm<sup>3</sup>/: 26,1...29,1  
1000H.: (25,3...29,9)  
4th speed 1/min: 2400  
Del. quantity cm<sup>3</sup>/: 26,9...29,9  
1000H.: (26,2...30,6)  
5th speed 1/min: 2000  
Del. quantity cm<sup>3</sup>/: 28,6...31,6  
1000H.: (28,1...32,1)  
6th speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/: 30,9...31,9  
1000H.: (29,1...33,7)  
7th speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/: 28,9...31,9  
1000H.: (28,4...32,4)  
8th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 28,4...31,4  
1000H.: (26,9...32,9)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 7,6...11,6  
1000H.: (5,6...13,6)

2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 1,0...6,0  
1000H.: (0,0...7,0)  
3rd speed 1/min: 700  
Del. quantity cm<sup>3</sup>/: 0,0...2,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H.: 45,0

2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H.: 36,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4  
KF mm : 5,6...5,8  
MS mm : 1,6...2,0  
SVS max. mm : 3,6

Remarks:

APPLICATION

Opel - Corsa



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,3 H  
 Edition : 10.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 074 899  
 Injection pump  
 Pump designation : PES4M55C32ORS167  
 EP type number : 0 410 054 960  
 Governor  
 Governor design. : RSF375/1700M69-4  
 Governor no. : 0 420 021 139

Customer-spec. information  
 Customer : MB-NFZ

Engine : 0M601-2.31

1st version kW : 49.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00  
 Firing order : 1- 3- 4- 2

C09

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 3.6...3.7

100 s: (3.5...3.8)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 36.0...37.0

1000 : (35.0...38.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,1...9,6

Speed rpm : 1800

4th rack travel in: 2300

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

Speed rpm : 375  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 250  
Minimum rack travel : 10.20  
Speed rpm : 375  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 3.00  
Speed rpm : 450...550  
Speed rpm : 1000  
Maximum rack travel : 1.50

#### SET IDLE AUXILIARY SPRING

Speed rpm : 420  
Rack travel in mm : 3.9...4.1  
                                  : (3.8...4.2)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 1400  
Rack travel in m: 11.60...11.90  
3rd speed rpm : 1650  
Rack travel in m: 11.40...11.70  
4th speed rpm : 500  
Rack travel in m: 11.60...11.90 \*  
5th speed rpm : 800  
Rack travel in m: 11.90...12.20\*\*

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

#### Measurement

Speed 1/min : 1000  
1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del.quantity cm<sup>3</sup>/ : 36.0...37.5  
                          1000 s: (35.0...38.5)  
Spread cm<sup>3</sup> : 2.50  
                          1000 s: (3.)  
Aneroid pressure h: 1100

Speed rpm : 1650  
Del.quantity cm<sup>3</sup>/ : 36.5...38.5  
                          1000 s: (37.5...39.5)  
Spread cm<sup>3</sup> : 2.50  
                          1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 31.5...33.0 \*  
                          1000 s: (30.5...34.0) \*  
Spread cm<sup>3</sup> : 2.50  
                          1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 34.0...35.5 \*\*  
                          1000 s: (33.0...36.5) \*\*  
Spread cm<sup>3</sup> : 2.50  
                          1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 52.0  
                          1000 s:  
Rack travel in mm : 20.1

#### HIGH IDLE

1st version  
Aneroid pressure h: 1100  
Speed rpm : 1800  
Rack travel in mm : 9.10...9.60  
Del.quantity cm<sup>3</sup>/ : 28.0...32.0  
                          1000 s: (27.0...33.0)  
Spread cm<sup>3</sup> : 2.50  
                          1000 s: (3.00)

#### LOW IDLE

Speed rpm : 375  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 5.0...6.0  
                          1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
                          1000 s: (1.50)

#### SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425  
Rack travel in mm : (6,4...8,0)  
Del.quantity cm<sup>3</sup>/ : -  
                          1000 s: (10,5...18,5)  
Vacuum hPa : 400

Remarks:

Pin projection = 16.60...16.70 mm

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $15.3^{\circ}$ ... $15.7^{\circ}$   
( $15.2$ ... $15.8^{\circ}$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With  $n = 375$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

Difference in start of delivery between  
max. and min. value = max.  $1^{\circ}$  angular  
displacement of cam

\* Setting point for negative torque  
control - negative retainer behind  
\*\* Reference measurement:  
Control-rod travel and delivery too  
large - position spiral spring  
Control-rod travel and delivery too  
small - position spiral spring upwards

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,3 a  
 Edition : 10.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 074 900  
 Injection pump  
 Pump designation : PES4M55C320RS167  
 EP type number : 0 410 054 960  
 Governor  
 Governor design. : RSF360/1900M70-4  
 Governor no. : 0 420 021 123

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM601-2.3l

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet pressure, bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar : 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 20.00...22.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 4.0...4.1

100 s : (3.9...4.2)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 335.0

Rack travel in mm : 5.1...5.3

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del. quantity : 40.0...41.0

1000 : (39.0...42.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees : 50...0

3rd rack travel in : 7,0...7,5

Speed rpm : 2100

4th rack travel in : 2500

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees : 12...16

Setting point w/out bumper spring

Speed rpm : 335  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 250  
Minimum rack travel: 7.50  
Speed rpm : 335  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.50  
Speed rpm : 550... ( )  
Speed rpm : 1000  
Maximum rack travel: 1.50

#### SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 3.9...4.1  
: (3.8...4.2)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 1400  
Rack travel in m: 12.20...12.50  
3rd speed rpm : 1900  
Rack travel in m: 11.40...11.70  
4th speed rpm : 500  
Rack travel in m: 12.10...12.40 \*  
5th speed rpm : 800  
Rack travel in m: 12.40...12.70\*\*

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

#### Measurement

Speed 1/min : 1000  
1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del.quantity cm<sup>3</sup>/ : 39.5...41.0  
1000 s: (38.5...42.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.)  
Aneroid pressure h: 1100

Speed rpm : 1900  
Del.quantity cm<sup>3</sup>/ : 39.5...41.5  
1000 s: (38.5...42.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 34.5...36.0 \*  
1000 s: (33.5...37.0) \*  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 37.5...39.0 \*\*  
1000 s: (36.5...40.0) \*\*  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

1st version  
Aneroid pressure h: 1100  
Speed rpm : 2100  
Rack travel in mm : 7.00...7.50  
Del.quantity cm<sup>3</sup>/ : 22.0...26.0  
1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 335  
Rack travel in mm : 5.10...5.30  
Del.quantity cm<sup>3</sup>/ : 5.0...6.0  
1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 360  
Rack travel in mm : (12.2...13.6)  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (32.0...40.0)  
Current A : 1.8  
Control lever at full-load stop  
Speed rpm : 2500  
Rack travel in mm : 0.0...1.0

Current

short-duration A : 3.0

Starting test

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : -

min. 1000 s: 52.0 / 1,8A

Remarks:

:  
Pin projection = 16.60...16.70 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With n = 335 1/min. and pu = 450 mbar,

control rod must move quickly to

control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = 15.3°...15.7°

(15.2...15.8°) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between

max. and min. value = max. 1° angular

displacement of cam

\* Setting point for negative torque

control - negative retainer behind

\*\* Reference measurement:

Control-rod travel and delivery too

large - position spiral spring

Control-rod travel and delivery too

small - position spiral spring upwards

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.3 B  
 Edition : 10.11.89  
 Replaces :  
 Test oil : ISO-4113  
 Combination no. : 0 400 074 905  
 Injection pump  
 Pump designation : PES4M55C32ORS167  
 EP type number : 0 410 054 960  
 Governor  
 Governor design. : RSF375/1900M69-1  
 Governor no. : 0 420 021 102

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM601-2.3l

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00x2.00x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 20.00...22.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000  
 -----  
 Rack travel in mm : 12.80...12.90  
 -----  
 Del. quantity cm<sup>3</sup>/ : 4.0...4.1  
 -----  
 100 s: (3.9...4.2)  
 -----  
 Spread cm<sup>3</sup> : 0.2  
 -----  
 100 s: (0.3)  
 -----

2nd speed rpm : 375.0  
 Rack travel in mm : 5.0...5.2  
 Del. quantity cm<sup>3</sup>/ : 0.5...0.6  
 100 s: (0.4...0.9)  
 Spread cm<sup>3</sup> : 0.1  
 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1100  
 Del. quantity : 40.0...41.0  
 1000 : (39.0...42.0)  
 Spread cm<sup>3</sup> : 2.50  
 1000 : (3.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 50...0  
 3rd rack travel in: 7,0...7,5  
 Speed rpm : 2100  
 4th rack travel in: 2500  
 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000  
 Rack travel in mm : 1.4...1.5

LOW IDLE 1  
 Control lever  
 position degrees: 11...15  
 Setting point w/out bumper spring

Speed rpm : 375  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 250  
Minimum rack travel: 10.20  
Speed rpm : 375  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 3.00  
Speed rpm : 450...550  
Speed rpm : 1000  
Maximum rack travel: 1.50

#### SET IDLE AUXILIARY SPRING

Speed rpm : 420  
Rack travel in mm : 3.9...4.1  
: (3.8...4.2)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 1400  
Rack travel in m: 12.20...12.50  
3rd speed rpm : 1900  
Rack travel in m: 11.40...11.70  
4th speed rpm : 500  
Rack travel in m: 12.10...12.40 \*  
5th speed rpm : 800  
Rack travel in m: 12.40...12.70\*\*

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del.quantity cm<sup>3</sup>/ : 39.5...41.0  
1000 s: (38.5...42.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1100

Speed rpm : 1900  
Del.quantity cm<sup>3</sup>/ : 39.5...41.5  
1000 s: (38.5...42.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

Aneroid pressure h: 1100  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 34.5...36.0 \*  
1000 s: (33.5...37.0) \*  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 37.5...39.0 \*\*  
1000 s: (36.5...40.0) \*\*  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.10

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2100  
Rack travel in mm : 7.00...7.50  
Del.quantity cm<sup>3</sup>/ : 22.0...26.0  
1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 375  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 5.0...6.0  
1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425  
Rack travel in mm : (6.4...8.0)  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (10.5...18.5)  
Vacuum hPa : 400

Remarks:



Pin projection = 16.60...16.70 mm

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With  $n = 375$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $15.3^\circ \dots 15.7^\circ$   
( $15.2 \dots 15.8^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

\* Setting point for negative torque  
control - negative retainer behind

\*\* Reference measurement:

Control-rod travel and delivery too  
large - position spiral spring

Control-rod travel and delivery too

small - position spiral spring upwards

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.3 C  
 Edition : 10.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 074 907  
 Injection pump  
 Pump designation : PES4M55C320RS167  
 EP type number : 0 410 054 960  
 Governor  
 Governor design. : RSF360/2000M70  
 Governor no. : 0 420 021 105

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM601-2.3l

1st version kW : 60.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 4.0...4.1

100 s : (3.9...4.2)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 335.0

Rack travel in mm : 5.1...5.3

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 40.0...41.0

1000 : (39.0...42.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.0...7.5

Speed rpm : 2200

4th rack travel in: 2500

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 335  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 250  
Minimum rack trave: 7.50  
Speed rpm : 335  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.50  
Speed rpm : 550...650  
Speed rpm : 1000  
Maximum rack trave: 1.50

#### SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 3.9...4.1  
: (3.8...4.2)

#### TORQUE CONTROL

##### Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 1400  
Rack travel in m: 12.20...12.50  
3rd speed rpm : 2000  
Rack travel in m: 11.40...11.70  
4th speed rpm : 500  
Rack travel in m: 12.10...12.40 \*  
5th speed rpm : 800  
Rack travel in m: 12.40...12.70\*\*

#### Aneroid/Altitude Compensator Test

##### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

##### Measurement

Speed 1/min : 1000  
1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del.quantity cm3/ : 39.5...41.0  
1000 s: (38.5...42.0)  
Spread cm3 : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1100

Speed rpm : 2000  
Del.quantity cm3/ : 39.5...41.5  
1000 s: (38.5...42.5)  
Spread cm3 : 2.50  
1000 s: (3.00)

Aneroid pressure h: 1100  
Speed rpm : 500  
Del.quantity cm3/ : 34.5...36.0 \*  
1000 s: (33.5...37.0) \*  
Spread cm3 : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 800  
Del.quantity cm3/ : 37.5...39.0 \*\*  
1000 s: (36.5...40.0) \*\*  
Spread cm3 : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2200  
Rack travel in mm : 7.00...7.50  
Del.quantity cm3/ : 22.0...26.0  
1000 s: (21.0...27.0)  
Spread cm3 : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 335  
Rack travel in mm : 5.10...5.30  
Del.quantity cm3/ : 5.0...6.0  
1000 s: (4.5...9.0)  
Spread cm3 : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

##### Control lever at idle stop

Speed rpm : 360  
Rack travel in mm : (12.2...13.6)  
Del.quantity cm3/ : -  
1000 s: (32.0...40.0)  
Current A : 1.8  
Control lever at full-load stop  
Speed rpm : 2650  
Rack travel in mm : 0.00...1.00

Current

short-duration A : 3.00

Starting test

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : -

min. 1000 s: 52.0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With  $n = 335$  1/min. and  $p_u = 450$  mbar,

control rod must move quickly to

control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 =  $15.3^\circ \dots 15.7^\circ$

( $15.2 \dots 15.8^\circ$ ) angular displacement of

cam following start of delivery of

cylinder no. 1.

Difference in start of delivery between

max. and min. value = max.  $1^\circ$  angular

displacement of cam

\* Setting point for negative torque

control - negative retainer behind

\*\* Reference measurement:

Control-rod travel and delivery too

large - position spiral spring

Control-rod travel and delivery too

small - position spiral spring upwards

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,9 A  
 Edition : 10.11.89  
 Replaces : 24.02.89  
 Test oil : ISO-4113

Combination no. : 0 400 075 010

Injection pump  
 Pump designation : PESSM55C320RS176  
 EP type number : 0 410 055 975  
 Governor  
 Governor design. : RSV350...1500MOC353-3

Governer no. : 0 420 033 040

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM602 (2,9l)

1st version kW : 54.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1480

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 3.8...3.9

100 s: (3.7...4.0)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 0.5...0.7

100 s: (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1480

Del. quantity : 38.0...39.0

1000 : (37.0...40.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.80

Speed rpm : 1520...1530

2nd rack travel in: 4.00

Speed rpm : 1590...1630

4th rack travel in: 1750

Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 100  
Minimum rack trave: 20.10  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1480  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 1100  
Rack travel in m: 13.10...13.30  
3rd speed rpm : 1350  
Rack travel in m: 12.30...12.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 40.0...41.0  
1000 s: (39.0...42.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Speed rpm : 1350  
Del.quantity cm<sup>3</sup>/ : 39.0...40.5  
1000 s: (38.0...41.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1520...1530

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.10

#### LOW IDLE

Speed rpm : 350

C22

Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 5.0...7.0  
1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

Remarks:

:  
Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 = 15.3<sup>0</sup>...15.7<sup>0</sup>  
(15.2...15.8<sup>0</sup>) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max. 1<sup>0</sup> angular  
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.5 H9  
 Edition : 10.11.89  
 Replaces : 17.02.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 934  
 Injection pump  
 Pump designation : PES5M55C320RS158-1  
 EP type number : 0 410 055 979  
 Governor  
 Governor design. : RSF340/2300M73-1  
 Governor no. : 0 420 021 146

Customer-spec. information  
 Customer : MB-PKW

Engine : OM602A-ECE

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

C23

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del. quantity cm<sup>3</sup>/ : 5.1...5.2

100 s : (5.0...5.3)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 345.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.4...0.8)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1850

Del. quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees : 50...0

3rd rack travel in : 8,1...8,5

Speed rpm : 2500

4th rack travel in : 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever

position degrees : 8...12

Setting point w/out bumper spring

Speed rpm : 345  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 220  
Minimum rack travel : 8.00  
Speed rpm : 345  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.50  
Speed rpm : 540...640  
Speed rpm : 1000  
Maximum rack travel : 1.80

#### SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 4.2...4.4  
: (4.1...4.5)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 1600  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 2200  
Rack travel in m: 12.30...12.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.50...0.90

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 1050  
Rack travel in m: 3.90...4.10  
2nd pressure hPa : 750  
Rack travel in m: 5.80...6.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del. quantity cm<sup>3</sup>/ : 50.0...51.5  
1000 s: (49.0...52.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 48.5...50.5  
1000 s: (47.5...51.5)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1050  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 33.0...34.0  
1000 s: (32.0...35.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.10...8.50  
Del. quantity cm<sup>3</sup>/ : 29.0...33.0  
1000 s: (28.0...34.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 345  
Rack travel in mm : 5.30...5.50  
Del. quantity cm<sup>3</sup>/ : 5.0...6.0  
1000 s: (4.0...8.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 370  
Rack travel in mm : (12.4...13.8)  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (41.0...49.0)  
Current A : 1.8  
Control lever at full-load stop  
Speed rpm : 2950  
Rack travel in mm : 0.0...1.0  
Current  
short-duration A : 3.0  
Starting test  
Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52.0 / 1.8A

Remarks:

Pin projection = 16.60...16.70 mm



#### CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $49^{\circ}$ , max.  
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.  
Control-lever position  $46.5^{\circ}$ , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $19.3^{\circ}$ ... $19.7^{\circ}$   
( $19.2$ ... $19.8^{\circ}$ ) angular displacement of cam following start of delivery of cylinder no. 1.  
Difference in start of delivery between max. and min. value = max.  $1^{\circ}$  angular displacement of cam

#### CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At  $n = 345$  1/min and  $p_u = 450$  mbar control rod must move briskly to control-rod travel = 0 mm

#### ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At  $n = 1000$  min.  $-1$ ,  $I = 2.5$  A, difference in delivery referenced to full-load delivery (4.4...6.4) ccm/1000 strokes.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 C14  
 Edition : 10.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 935  
 Injection pump  
 Pump designation : PES5M55C32ORS158-1  
 EP type number : 0 410 055 979  
 Governor  
 Governor design. : RSF340/2300M65-4  
 Governor no. : 0 420 021 144

Customer-spec. information  
 Customer : MB-PKW

Engine : OM602A-ECE

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00  
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del. quantity cm<sup>3</sup>/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del. quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,1...8,5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 315  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 220  
Minimum rack travel: 8.00  
Speed rpm : 315  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.50  
Speed rpm : 540...640  
Speed rpm : 1000  
Maximum rack travel: 1.80

#### SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 4,2...4,4  
: (4,1...4,5)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 1600  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 2200  
Rack travel in m: 12.30...12.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.50...0.90

#### Measurement

Speed 1/min : 1000  
1st pressure hPa : 1050  
Rack travel in m: 3.90...4.10  
2nd pressure hPa : 750  
Rack travel in m: 5.80...6.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del. quantity cm<sup>3</sup>/ : 50.0...51.5  
1000 s: (49.0...52.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 48.5...50.5  
1000 s: (47.5...51.5)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1050  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 33.0...34.0  
1000 s: (32.0...35.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.10

#### HIGH IDLE

1st version  
Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.10...8.50  
Del. quantity cm<sup>3</sup>/ : 29.0...33.0  
1000 s: (28.0...34.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 315  
Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 5.5...6.5  
1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 340  
Rack travel in mm : (12,4...13,8  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (41,0...49,0)  
Current A : 1,8  
Control lever at full-load stop  
Speed rpm : 2950  
Rack travel in mm : 0,0...1,0  
Current  
short-duration A : 3,0  
Starting test  
Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

#### CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm  
control-rod travel at correction  
screw on ALDA pressure box.

#### Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 =  $19.3^{\circ}$ ... $19.7^{\circ}$

( $19.2$ ... $19.8^{\circ}$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^{\circ}$  angular  
displacement of cam

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With  $n = 315$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 C15  
 Edition : 13.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 936  
 Injection pump  
 Pump designation : PESSM55C320RS158  
 EP type number : 0 410 055 986  
 Governor  
 Governor design. : RSF340/2300M64-14  
 Governor no. : 0 420 021 142

Customer-spec. information  
 Customer : MB-PKW

Engine : OM602A-Abgasl.

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

D01

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del. quantity cm<sup>3</sup>/ : 5.1...5.2

100 s : (5.0...5.3)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1850

Del. quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees : 50...0

3rd rack travel in : 8,1...8,5

Speed rpm : 2500

4th rack travel in : 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees : 8...12

Setting point w/out bumper spring

Speed rpm : 315  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 220  
Minimum rack travel: 8.00  
Speed rpm : 315  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.50  
Speed rpm : 540...640  
Speed rpm : 1000  
Maximum rack travel: 1.80

#### SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 4,2...4,4  
: (4,1...4,5)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 1600  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 2200  
Rack travel in m: 12.30...12.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.50...0.90

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 1050  
Rack travel in m: 3.90...4.10  
2nd pressure hPa : 750  
Rack travel in m: 5.80...6.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del. quantity cm<sup>3</sup>/ : 50.0...51.5  
1000 s: (49.0...52.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 48.5...50.5  
1000 s: (47.5...51.5)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1050  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 33.0...34.0  
1000 s: (32.0...35.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

1st version  
Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.10...8.50  
Del. quantity cm<sup>3</sup>/ : 29.0...33.0  
1000 s: (28.0...34.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 315  
Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 5.5...6.5  
1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 340  
Rack travel in mm : (12,4...13,8)  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (41,0...49,0)  
Current A : 1,8  
Control lever at full-load stop  
Speed rpm : 2950  
Rack travel in mm : 0,0...1,0  
Current  
short-duration A : 3,0  
Starting test  
Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

#### CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

#### Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 =  $19.3^{\circ}$ ... $19.7^{\circ}$

( $19.2^{\circ}$ ... $19.8^{\circ}$ ) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max.  $1^{\circ}$  angular displacement of cam

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $44,5^{\circ}$  max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

-Control-lever position  $42,0^{\circ}$ ,

control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With  $n = 315$  1/min. and  $p_u = 450$  mbar, control rod must move quickly to control-rod travel = 0 mm

#### Testing and adjusting the control-rod-travel sensor with evaluation circuit

R2.1.3

#### Receiving inspection

Shift control lever to full-load stop.

Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 3.230...3.310 (3.190...3.350) V must be displayed on the digital voltmeter.

#### Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever.

Shift control-rod-travel sensor until  $U = 2.095$ ... $2.105$  ( $2.098$ ... $2.102$ ) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 3.230...3.310 V must be attained.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 2.5 C2  
Edition : 13.11.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 075 937  
  
Injection pump  
Pump designation : PESSM55C32ORS158  
EP type number : 0 410 055 986  
Governor  
Governor design. : RSF340/2300M74  
Governor no. : 0 420 021 140

Customer-spec. information  
Customer : MB-PKW

Engine : OM602A-Abgasl.  
  
1st version kW : 92.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 469 990 351  
  
Inlet press., bar : 1.00  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32  
  
Prestroke mm : 2.20...2.30  
                  : (2.15...2.35)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288  
Tolerance + - ° : 0.00 (1.00)  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
-----  
Rack travel in mm : 13.90...14.00  
-----  
Del. quantity cm<sup>3</sup>/ : 5.1...5.2  
100 s : (5.0...5.3)  
-----  
Spread cm<sup>3</sup> : 0.2  
100 s : (0.3)  
-----  
2nd speed rpm : 345.0  
Rack travel in mm : 5.5...5.5  
Del. quantity cm<sup>3</sup>/ : 0.5...0.6  
100 s : (0.4...0.8)  
Spread cm<sup>3</sup> : 0.1  
100 s : (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h : 1850  
Del. quantity : 51.0...52.0  
1000 : (50.0...53.0)  
Spread cm<sup>3</sup> : 2.50  
1000 : (3.00)

## RATED SPEED

1st version  
Control lever  
position degrees : 50...0  
3rd rack travel in : 8,1...8,5  
Speed rpm : 2500  
4th rack travel in : 2950  
Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000  
Rack travel in mm : 1.7...1.8

## LOW IDLE 1

Control lever  
position degrees : 8...12  
Setting point w/out bumper spring



Speed rpm : 345  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 220  
Minimum rack travel: 8.00  
Speed rpm : 345  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.50  
Speed rpm : 540...640  
Speed rpm : 1000  
Maximum rack travel: 1.80

#### SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 4,2...4,4  
: (4,1...4,5)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 1600  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 2200  
Rack travel in m: 12.30...12.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.50...0.90

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 1050  
Rack travel in m: 3.90...4.10  
2nd pressure hPa : 750  
Rack travel in m: 5.80...6.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del.quantity cm<sup>3</sup>/ : 50.0...51.5  
1000 s: (49.0...52.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2200  
Del.quantity cm<sup>3</sup>/ : 48.5...50.5  
1000 s: (47.5...51.5)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1050  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 33.0...34.0  
1000 s: (32.0...35.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.10...8.50  
Del.quantity cm<sup>3</sup>/ : 29.0...33.0  
1000 s: (28.0...34.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 345  
Rack travel in mm : 5.50...5.50  
Del.quantity cm<sup>3</sup>/ : 5.0...6.0  
1000 s: (4.0...8.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

#### Control lever at idle stop

Speed rpm : 370  
Rack travel in mm : (12.4...13.8)  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (41.0...49.0)

Current A : 1.8  
Control lever at full-load stop  
Speed rpm : 2950  
Rack travel in mm : 0.0...1.0  
Current

short-duration A : 3.0

#### Starting test

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52.0 / 1,8A

#### Remarks:

Pin projection = 16.60...16.70 mm

#### CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $49^{\circ}$ , max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position  $46.5^{\circ}$ , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 =  $19.3^{\circ}$ ... $19.7^{\circ}$  ( $19.2$ ... $19.8^{\circ}$ ) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max.  $1^{\circ}$  angular displacement of cam

#### Testing and adjusting the control-rod travel sensor with evaluation circuit R2.1.3

##### Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 3.230...3.310 (3.190...3.350) V must be displayed on the digital voltmeter.

##### Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until  $U = 2.095$ ... $2.105$  ( $2.098$ ... $2.102$ ) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 3.230...3.310 V must be attained.

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $44.5^{\circ}$  max. 0.2 mm control-rod travel deduction

allowable after switchover point (of starting cam) up to 1000 1/min. -Control-lever position  $42.0^{\circ}$ , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

#### CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop. At  $n = 345$  1/min and  $p_u = 450$  mbar control rod must move briskly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.5 C3  
 Edition : 13.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 938  
 Injection pump  
 Pump designation : PESSM55C320RS170  
 EP type number : 0 410 055 977  
 Governor  
 Governor design. : RSF350/2300M71-3  
 Governor no. : 0 420 021 136

Customer-spec. information  
 Customer : MB-PKW

Engine : 0M602-ECE MJ90

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 20.00...22.00  
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 7.0...7.2

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9.0...9.4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 350  
Rack travel in mm : 7.1

#### Testing:

Speed rpm : 220  
Minimum rack trave: 10.00  
Speed rpm : 350  
Rack travel in mm : 7.00...7.20  
Rack travel in mm : 2.50  
Speed rpm : 670...770  
Speed rpm : 1000  
Maximum rack trave: 1.80

#### SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 5.9...6.1  
                  : (5.8...6.2)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 1800  
Rack travel in m: 12.20...12.40  
3rd speed rpm : 2200  
Rack travel in m: 11.90...12.10

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

##### Measurement

Speed 1/min : 1000

1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1800  
Del.quantity cm<sup>3</sup>/ : 34.0...35.5  
                  1000 s: (33.0...36.5)  
Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.0)  
Aneroid pressure h: 1100  
Speed rpm : 2200  
Del.quantity cm<sup>3</sup>/ : 34.0...36.0  
                  1000 s: (33.0...37.0)

Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 52.0  
                  1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2500  
Rack travel in mm : 9.00...9.40  
Del.quantity cm<sup>3</sup>/ : 22.0...26.0  
                  1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.00)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.00...7.20  
Del.quantity cm<sup>3</sup>/ : 5.0...6.0  
                  1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
                  1000 s: (1.50)

#### SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 400  
Rack travel in mm : (7.1...8.7)  
Del.quantity cm<sup>3</sup>/ : -  
                  1000 s: (5.0...13.0)  
Vacuum hPa : 400

#### Remarks:

Pin projection = 16.60...16.70 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49<sup>0</sup>, max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
Control-lever position 46.5<sup>0</sup>,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

#### CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At  $n = 350$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $19.3^\circ \dots 19.7^\circ$   
( $19.2 \dots 19.8^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

ADJUSTMENT OF ACTIVE BUCKING DAMPING  
(ARD)

Control lever on full-load stop. At  $n$   
= 1000 min.  $-1$ ,  $I = 2.5$  A, difference  
in delivery referenced to full-load  
delivery (6.3...8.3) ccm/1000 strokes.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.5 C4  
 Edition : 13.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 939  
 Injection pump  
 Pump designation : PESSM55C32ORS173  
 EP type number : 0 410 055 976  
 Governor  
 Governor design. : RSF350/2300M71-2  
 Governor no. : 0 420 021 135

Customer-spec. information  
 Customer : MB-PKW

Engine : OM602-Abgi. MJ90  
 1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
 : (1.65...1.85)  
 Rack travel in mm : 20.00...22.00  
 Firing order : 1- 2- 4- 5- 3

D10

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del. quantity cm<sup>3</sup>/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,2...9,6

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 350  
Rack travel in mm : 6.5

Testing:

Speed rpm : 220  
Minimum rack travel: 10.00  
Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.50  
Speed rpm : 600...700  
Speed rpm : 1000  
Maximum rack travel: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 5.2...5.4  
                  : (5.1...5.5)

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 1800  
Rack travel in m: 11.80...12.00  
3rd speed rpm : 2200  
Rack travel in m: 11.50...11.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100  
Speed rpm : 1800  
Del. quantity cm<sup>3</sup>/ : 34.5...36.0  
                  1000 s: (33.5...37.0)  
Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.)  
Aneroid pressure h: 1100  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 33.0...35.0  
                  1000 s: (32.0...36.0)

Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.00)

INTERMEDIATE RATED SPEED

Control lever  
position degrees: 30...0  
Rack travel in mm : 7.80  
Speed rpm : 0...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0...0.0  
                  1000 s: (52.0...0.0)  
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version  
Aneroid pressure h: 1100  
Speed rpm : 2500  
Rack travel in mm : 9.20...9.60  
Del. quantity cm<sup>3</sup>/ : 22.0...26.0  
                  1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.00)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Del. quantity cm<sup>3</sup>/ : 5.0...6.0  
                  1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
                  1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE  
(ELA)

Speed rpm : 400  
Rack travel in mm : (6.7...8.1)  
Del. quantity cm<sup>3</sup>/ : -  
                  1000 s: (5.0...13.0)  
Vacuum hPa : 400

Remarks:

Fin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY  
SPRING CUTOFF

-Control-lever position 49°, max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.

Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

#### CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At  $n = 350$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $16.8^\circ \dots 17.2^\circ$   
( $16.7 \dots 17.3^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.5 C5  
 Edition : 13.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 940  
 Injection pump  
 Pump designation : PESSM55C32ORS173  
 EP type number : 0 410 055 976  
 Governor  
 Governor design. : RSF340/2300M60-26  
 Govenner no. : 0 420 021 133

Customer-spec. information  
 Customer : MB-PKW

Engine : OM602-Abgl. M190  
 1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 469 990 351  
 Inlet press., bar : 1.00  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 30...32  
 Prestroke mm : 1.70...1.80  
 : (1.65...1.85)  
 Rack travel in mm : 20.00...22.00  
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.00 (1.00)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 12.40...12.50  
 Del. quantity cm<sup>3</sup>/ : 3.1...3.2  
 100 s : (3.0...3.3)  
 Spread cm<sup>3</sup> : 0.2  
 100 s : (0.3)  
 2nd speed rpm : 315.0  
 Rack travel in mm : 6.4...6.6  
 Del. quantity cm<sup>3</sup>/ : 0.5...0.6  
 100 s : (0.4...0.9)  
 Spread cm<sup>3</sup> : 0.1  
 100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h : 1100  
 Del. quantity : 31.5...32.5  
 1000 : (30.5...33.5)  
 Spread cm<sup>3</sup> : 2.50  
 1000 : (3.00)

RATED SPEED

1st version  
 Control lever  
 position degrees : 50...0  
 3rd rack travel in : 9,2...9,6  
 Speed rpm : 2500  
 4th rack travel in : 2950  
 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000  
 Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever  
 position degrees : 12...16  
 Setting point w/out bumper spring

Speed rpm : 315  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 220  
Minimum rack trave: 8.00  
Speed rpm : 315  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.50  
Speed rpm : 600...700  
Speed rpm : 1000  
Maximum rack trave: 1.50

#### SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 5.2...5.4  
                  : (5.1...5.5)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 1800  
Rack travel in m: 11.80...12.00  
3rd speed rpm : 2200  
Rack travel in m: 11.50...11.70

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

##### Measurement

Speed 1/min : 1000

1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1800  
Del.quantity cm3/ : 34.5...36.0  
                  1000 s: (33.5...37.0)  
Spread cm3 : 2.50  
                  1000 s: (3.0)  
Aneroid pressure h: 1100  
Speed rpm : 2200  
Del.quantity cm3/ : 33.0...35.0  
                  1000 s: (32.0...36.0)

Spread cm3 : 2.50  
                  1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 52.0  
                  1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2500  
Rack travel in mm : 9.20...9.60  
Del.quantity cm3/ : 22.0...26.0  
                  1000 s: (21.0...27.0)  
Spread cm3 : 2.50  
                  1000 s: (3.00)

#### LOW IDLE

Speed rpm : 315  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 5.0...6.0  
                  1000 s: (4.5...9.0)  
Spread cm3 : 1.00  
                  1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

##### Control lever at idle stop

Speed rpm : 340  
Rack travel in mm : (13.0...14.4)  
Del.quantity cm3/ : -  
                  1000 s: (29.0...37.0)

Current A : 1.8

##### Control lever at full-load stop

Speed rpm : 2950  
Rack travel in mm : 0.0...1.0  
Current

short-duration A : 3.0

##### Starting test

Speed rpm : 100  
Del.quantity cm3/ : -  
min. 1000 s: 52.0 / 1,8A

#### Remarks:

Pin projection = 16.60...16.70 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.  
0.2 mm control-rod travel deduction

allowable after switchover point (of starting cam) up to 1000 1/min.  
Control-lever position  $46.5^{\circ}$ ,  
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With  $n = 315$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max.  $1^{\circ}$  angular displacement of cam

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $16.8^{\circ} \dots 17.2^{\circ}$   
( $16.7 \dots 17.3^{\circ}$ ) angular displacement of cam following start of delivery of cylinder no. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 2.5 C8  
Edition : 13.11.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 075 941  
Injection pump  
Pump designation : PESSM55C320RS173  
EP type number : 0 410 055 976  
Governor  
Governor design. : RSF350/2300M56-11  
Governor no. : 0 420 021 131

Customer-spec. information  
Customer : MB-PKW

Engine : OM602-Abgl. MJ90

1st version kW : 64.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del. quantity cm<sup>3</sup>/ : 3.1...3.2

100 s : (3.0...3.3)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del. quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,2...9,6

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER

### POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

## LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 350  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 220  
Minimum rack travel : 10.00  
Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.50  
Speed rpm : 600...700  
Speed rpm : 1000  
Maximum rack travel : 1.50

#### SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 5.2...5.4  
: (5.1...5.5)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 1800  
Rack travel in m: 11.80...12.00  
3rd speed rpm : 2200  
Rack travel in m: 11.50...11.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1800  
Del. quantity cm<sup>3</sup>/ : 34.5...36.0  
1000 s: (33.5...37.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.)  
Aneroid pressure h: 1100  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 33.0...35.0  
1000 s: (32.0...36.0)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

1st version  
Aneroid pressure h: 1100  
Speed rpm : 2500  
Rack travel in mm : 9.20...9.60  
Del. quantity cm<sup>3</sup>/ : 22.0...26.0  
1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Del. quantity cm<sup>3</sup>/ : 5.0...6.0  
1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 400  
Rack travel in mm : (6.7...8.1)  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (5.0...13.0)  
Vacuum hPa : 400

#### Remarks:

:  
Pin projection = 16.60...16.70 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
Control-lever position 46.5°,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

#### CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At  $n = 350$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $16.8^\circ \dots 17.2^\circ$   
( $16.7 \dots 17.3^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.5 C9  
 Edition : 13.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 942  
 Injection pump  
 Pump designation : PES5M55C32ORS158-1  
 EP type number : 0 410 055 979  
 Governor  
 Governor design. : RSF340/2300M73  
 Governor no. : 0 420 021 129

Customer-spec. information

Customer : MB-PKW  
 Engine : OM602A-ECE

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 469 990 351  
 Inlet press., bar : 1.00  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 30...32  
 Prestroke mm : 2.20...2.30  
 : (2.15...2.35)  
 Rack travel in mm : 20.00...22.00  
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.00 (1.00)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000  
 -----  
 Rack travel in mm : 13.90...14.00  
 -----  
 Del. quantity cm<sup>3</sup>/ : 5.1...5.2  
 -----  
 100 s : (5.0...5.3)  
 -----  
 Spread cm<sup>3</sup> : 0.2  
 -----  
 100 s : (0.3)  
 -----  
 2nd speed rpm : 345.0  
 Rack travel in mm : 5.3...5.5  
 Del. quantity cm<sup>3</sup>/ : 0.5...0.6  
 100 s : (0.4...0.8)  
 Spread cm<sup>3</sup> : 0.1  
 100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h : 1850  
 Del. quantity : 51.0...52.0  
 1000 : (50.0...53.0)  
 Spread cm<sup>3</sup> : 2.50  
 1000 : (3.00)

RATED SPEED

1st version  
 Control lever  
 position degrees : 50...0  
 3rd rack travel in : 8,1...8,5  
 Speed rpm : 2500  
 4th rack travel in : 2950  
 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000  
 Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever  
 position degrees : 8...12  
 Setting point w/out bumper spring

Speed rpm : 345  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 220  
Minimum rack travel: 8.00  
Speed rpm : 345  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.50  
Speed rpm : 540...640  
Speed rpm : 1000  
Maximum rack travel: 1.80

#### SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 4.2...4.4  
: (4.1...4.5)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 1600  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 2200  
Rack travel in m: 12.30...12.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.50...0.90

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 1050  
Rack travel in m: 3.90...4.10  
2nd pressure hPa : 750  
Rack travel in m: 5.80...6.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del. quantity cm<sup>3</sup>/ : 50.0...51.5  
1000 s: (49.0...52.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 48.5...50.5  
1000 s: (47.5...51.5)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1050  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 33.0...34.0  
1000 s: (32.0...35.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

1st version  
Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.10...8.50  
Del. quantity cm<sup>3</sup>/ : 29.0...33.0  
1000 s: (28.0...34.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 345  
Rack travel in mm : 5.30...5.50  
Del. quantity cm<sup>3</sup>/ : 5.0...6.0  
1000 s: (4.0...8.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 370  
Rack travel in mm : (12.4...13.8)  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (41.0...49.0)  
Current A : 1.8  
Control lever at full-load stop  
Speed rpm : 2950  
Rack travel in mm : 0.0...1.0  
Current  
short-duration A : 3.0  
Starting test  
Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52.0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm



#### CORRECTION OF INJECTED-FUEL QUANTITY

- Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

- Control-lever position  $44,5^{\circ}$  max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
- Control-lever position  $42,0^{\circ}$ , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 =  $19.3^{\circ} \dots 19.7^{\circ}$  ( $19.2 \dots 19.8^{\circ}$ ) angular displacement of cam following start of delivery of cylinder no. 1.  
Difference in start of delivery between max. and min. value = max.  $1^{\circ}$  angular displacement of cam

#### CHECKING THE PNEUMATIC SHUTOFF BOX

- Control lever up against idle stop. At  $n = 345$  1/min and  $p_u = 450$  mbar control rod must move briskly to control-rod travel = 0 mm

#### ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At  $n = 1000$  min.  $-1$ ,  $I = 2.5$  A, difference in delivery referenced to full-load delivery ( $4.4 \dots 6.4$ ) ccm/1000 strokes.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,9 D  
 Edition : 13.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 943  
 Injection pump  
 Pump designation : PES5MSSC32ORS168  
 EP type number : 0 410 055 978  
 Governor  
 Governor design. : RSF350/1700M69-5  
 Governor no. : 0 420 021 147

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM602-2.9L

1st version kW : 62.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

D22

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 3.6...3.7

100 s : (3.5...3.8)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del. quantity : 36.0...37.0

1000 : (35.0...38.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever  
 position degrees : 50...0

3rd rack travel in : 9,1...9,6

Speed rpm : 1800

4th rack travel in : 2300

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever  
 position degrees : 12...16

Setting point w/out bumper spring

Speed rpm : 350  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 250  
Minimum rack travel: 9.20  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 3.00  
Speed rpm : 470...570  
Speed rpm : 1000  
Maximum rack travel: 1.50

#### SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 4.2...4.4  
: (4.1...4.5)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 1400  
Rack travel in m: 11.60...11.90  
3rd speed rpm : 1650  
Rack travel in m: 11.40...11.70  
4th speed rpm : 500  
Rack travel in m: 11.90...12.20 \*  
5th speed rpm : 800  
Rack travel in m: 12.10...12.40\*\*

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

#### Measurement

Speed 1/min : 1000  
1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del. quantity cm<sup>3</sup>/ : 36.0...37.5  
1000 s: (35.0...38.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1100

Speed rpm : 1650  
Del. quantity cm<sup>3</sup>/ : 36.5...38.5  
1000 s: (35.5...39.5)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

Aneroid pressure h: 1100  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 32.0...33.5 \*

1000 s: (31.0...34.5) \*  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

Aneroid pressure h: 1100  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 34.5...36.0 \*\*

1000 s: (33.5...37.0) \*\*  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

1st version  
Aneroid pressure h: 1100  
Speed rpm : 1800  
Rack travel in mm : 9.10...9.60  
Del. quantity cm<sup>3</sup>/ : 28.0...32.0  
1000 s: (27.0...33.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del. quantity cm<sup>3</sup>/ : 5.0...6.0  
1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 400  
Rack travel in mm : 5.4...7.0  
Del. quantity cm<sup>3</sup>/ : 5.0...13.0  
1000 s: -  
Vacuum hPa : 400

Remarks:

Pin projection = 16.60...16.70 mm

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At  $n = 350$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $15.3^\circ \dots 15.7^\circ$   
( $15.2 \dots 15.8^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

\* Setting point for negative torque  
control - negative retainer behind

\*\* Reference measurement:  
Control-rod travel and delivery too  
large - position spiral spring  
downwards

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 2.5 C10  
Edition : 13.11.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 075 944  
  
Injection pump  
Pump designation : PESSM55C32ORS177  
EP type number : 0 410 055 974  
Governor  
Governor design. : RSF340/2300M64-12  
Governor no. : 0 420 021 127

Customer-spec. information  
Customer : MB-PKW

Engine : OM602A-USA MJ90

1st version kW : 92.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

D25

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 5.1...5.2

100 s : (5.0...5.3)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 6.0...6.2

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.4...0.8)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1850

Del. quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees : 50...0

3rd rack travel in : 8,7...9,1

Speed rpm : 2500

4th rack travel in : 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

## LOW IDLE 1

Control lever

position degrees : 8...12

Setting point w/out bumper spring

Speed rpm : 315  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 220  
Minimum rack travel: 8.00  
Speed rpm : 315  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.50  
Speed rpm : -  
Speed rpm : 1000  
Maximum rack travel: 1.80

#### SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 4,7...4,9  
: (4,6...5,0)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 1600  
Rack travel in m: 13.30...13.50  
3rd speed rpm : 2200  
Rack travel in m: 12.50...12.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.30...0.70

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 1050  
Rack travel in m: 3.40...3.60  
2nd pressure hPa : 750  
Rack travel in m: 4.90...5.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del.quantity cm<sup>3</sup>/ : 49.5...51.0  
1000 s: (48.5...52.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2200  
Del.quantity cm<sup>3</sup>/ : 48.5...50.5  
1000 s: (47.5...51.5)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1050  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 33.0...34.0  
1000 s: (32.0...35.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.70...9.10  
Del.quantity cm<sup>3</sup>/ : 29.0...33.0  
1000 s: (28.0...34.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 315  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 5.0...6.0  
1000 s: (4.0...8.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

#### Control lever at idle stop

Speed rpm : 340  
Rack travel in mm : (12,8...14,2)  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (41,0...49,0)

#### Current A : 1,8 Control lever at full-load stop

Speed rpm : 2950  
Rack travel in mm : 0,0...1,0

#### Current short-duration A : 3,0

#### Starting test

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52,0 / 1,8A

#### Remarks:

:  
Pin projection = 16.60...16.70 mm

load stop; voltage value of 3.230...  
3.310 V must be attained.

#### CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm  
control-rod travel at correction  
screw on ALDA pressure box.

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $44,5^{\circ}$  max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
-Control-lever position  $42,0^{\circ}$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With  $n = 315$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

Difference in start of delivery between  
max. and min. value = max.  $1^{\circ}$  angular  
displacement of cam

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $16,8^{\circ} \dots 17,2^{\circ}$   
( $16,7 \dots 17,3^{\circ}$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

#### Testing and adjusting the control-rod- travel sensor with evaluation circuit R2.1.3

##### Receiving inspection

Shift control lever to full-load stop.  
Set 13.5 V at stabilizer. Apply  
1850 hPa to ALDA. Run up to speed of  
1000 1/min; a voltage of 3.230...3.310  
(3.190...3.350) V must be displayed  
on the digital voltmeter.

##### Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel  
delivery at 23.0...24.0 (22.0...25.0)  
ccm/1000 strokes with control lever.  
Shift control-rod-travel sensor until  
 $U = 2.095 \dots 2.105$  (2.098...2.102) V is  
indicated. Tighten fastening screws  
with 1...2 Nm. Control lever to full-

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 2.9 D1  
Edition : 13.11.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 075 947  
  
Injection pump  
Pump designation : PESSM55C32ORS168  
EP type number : 0 410 055 978  
Governor  
Governor design. : RSF340/1900M70-5  
Governor no. : 0 420 021 124

Customer-spec. information  
Customer : MB-NFZ

Engine : OM602-2.9l

1st version kW : 70.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 20.00...22.00  
Firing order : 1- 2- 4- 5- 3

D28

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 3.8...3.9

100 s : (3.7...4.0)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del. quantity : 38.0...39.0

1000 : (37.0...40.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees : 50...0

3rd rack travel in : 7,1...7,6

Speed rpm : 2100

4th rack travel in : 2500

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

## LOW IDLE 1

Control lever

position degrees : 12...16

Setting point w/out bumper spring



Speed rpm : 315  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 250  
Minimum rack travel: 7.00  
Speed rpm : 315  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.50  
Speed rpm : 500...600  
Speed rpm : 1000  
Maximum rack travel: 1.50

#### SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 4.0...4.2  
                  : (3.9...4.3)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 1400  
Rack travel in m: 12.10...12.40  
3rd speed rpm : 1900  
Rack travel in m: 11.60...11.90  
4th speed rpm : 500  
Rack travel in m: 12.20...12.40 \*  
5th speed rpm : 800  
Rack travel in m: 12.40...12.60\*\*

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

#### Measurement

Speed 1/min : 1000  
1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del.quantity cm<sup>3</sup>/ : 38.0...39.5  
                  1000 s: (37.0...40.5)  
Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.0)  
Aneroid pressure h: 1100

Speed rpm : 1900  
Del.quantity cm<sup>3</sup>/ : 39.5...41.5  
                  1000 s: (38.5...42.5)  
Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 34.5...36.0 \*  
                  1000 s: (33.5...37.0) \*  
Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 36.5...38.0 \*\*  
                  1000 s: (35.5...39.0) \*\*  
Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 52.0  
                  1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2100  
Rack travel in mm : 7.10...7.60  
Del.quantity cm<sup>3</sup>/ : 22.0...26.0  
                  1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.00)

#### LOW IDLE

Speed rpm : 315  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 5.0...6.0  
                  1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
                  1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 340  
Rack travel in mm : (12.2...13.6)  
Del.quantity cm<sup>3</sup>/ : -  
                  1000 s: (32.0...40.0)  
Current A : 1.8  
Control lever at full-load stop  
Speed rpm : 2500  
Rack travel in mm: 0.0...1.0

Current

short-duration A : 3.0

Starting test

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : -

min. 1000 s: 52.0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With  $n = 315$  1/min. and  $p_u = 450$  mbar,

control rod must move quickly to

control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 =  $15.3^\circ \dots 15.7^\circ$

( $15.2 \dots 15.8^\circ$ ) angular displacement of

cam following start of delivery of

cylinder no. 1.

Difference in start of delivery between

max. and min. value = max.  $1^\circ$  angular

displacement of cam

\* Setting point for negative torque

control - negative retainer behind

\*\* Reference measurement:

Control-rod travel and delivery too

large - position spiral spring

downwards

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,9 D2  
 Edition : 13.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 955  
 Injection pump  
 Pump designation : PESSM55C32ORS168  
 EP type number : 0 410 055 978  
 Governor  
 Governor design. : RSF340/2000M70-2  
 Govenner no. : 0 420 021 107

Customer-spec. information  
 Customer : MB-NFZ

Engine : 0M602-2.9l

1st version kW : 72.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

E03

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 3.8...3.9

100 s : (3.7...4.0)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.2...5.4

Del.quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 38.0...39.0

1000 : (37.0...40.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,1...7,6

Speed rpm : 2200

4th rack travel in: 2500

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 315  
Rack travel in mm : 5.3

Testing:

Speed rpm : 250  
Minimum rack trave: 7.00  
Speed rpm : 315  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.50  
Speed rpm : 500...600  
Speed rpm : 1000  
Maximum rack trave: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 4.0...4.2  
                                  : (3.9...4.3)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 1400  
Rack travel in m: 12.10...12.40  
3rd speed rpm : 2000  
Rack travel in m: 11.60...11.90  
4th speed rpm : 500  
Rack travel in m: 12.20...12.40 \*  
5th speed rpm : 800  
Rack travel in m: 12.40...12.60\*\*

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000  
1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del.quantity cm3/ : 38.0...39.5  
                                  1000 s: (37.0...40.5)  
Spread cm3 : 2.50  
                                  1000 s: (3.0)  
Aneroid pressure h: 1100

Speed rpm : 2000  
Del.quantity cm3/ : 39.5...41.5  
                                  1000 s: (38.5...42.5)  
Spread cm3 : 2.50  
                                  1000 s: (3.00)

Aneroid pressure h: 1100  
Speed rpm : 500  
Del.quantity cm3/ : 34.5...36.0 \*  
                                  1000 s: (33.5...37.0) \*  
Spread cm3 : 2.50  
                                  1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 800  
Del.quantity cm3/ : 36.5...38.0 \*\*  
                                  1000 s: (35.5...39.0) \*\*  
Spread cm3 : 2.50  
                                  1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 52.0  
                                  1000 s: -  
Rack travel in mm : 20.1

HIGH IDLE

1st version

Aneroid pressure h: 1100  
Speed rpm : 2200  
Rack travel in mm : 7.10...7.60  
Del.quantity cm3/ : 22.0...26.0  
                                  1000 s: (21.0...27.0)  
Spread cm3 : 2.50  
                                  1000 s: (3.00)

LOW IDLE

Speed rpm : 315  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 5.0...6.0  
                                  1000 s: (4.5...9.0)  
Spread cm3 : 1.00  
                                  1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE  
REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 340  
Rack travel in mm : (12.2...13.6)  
Del.quantity cm3/ : -  
                                  1000 s: (32.0...40.0)  
Current A : 1.8  
Control lever at full-load stop  
Speed rpm : 2650  
Rack travel in mm : 0.0...1.0

Current

short-duration A : 3.0

Starting test

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : -

min. 1000 s: 52.0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With n = 315 1/min. and pu = 450 mbar,

control rod must move quickly to

control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = 15.3°...15.7°

(15.2...15.8°) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max. 1° angular  
displacement of cam

\* Setting point for negative torque  
control - negative retainer behind

\*\* Reference measurement:

Control-rod travel and delivery too  
large - position spiral spring  
downwards

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 2.9 D3  
 Edition : 06.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 956  
 Injection pump  
 Pump designation : PESSM55C320RS168  
 EP type number : 0 410 055 978  
 Governor  
 Governor design. : RSF350/1900M69-3  
 Govenner no. : 0 420 021 104

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM602-2.91  
 1st version kW : 70.0

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 469 990 351  
 Inlet press., bar : 1.00  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 30...32  
 Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 20.00...22.00  
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.00 (1.00)  
 Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1000  
 -----  
 Rack travel in mm : 12.50...12.60  
 -----  
 Del. quantity cm<sup>3</sup>/ : 3.8...3.9  
 -----  
 100 s : (3.7...4.0)  
 -----  
 Spread cm<sup>3</sup> : 0.2  
 -----  
 100 s : (0.3)  
 -----  
 2nd speed rpm : 350.0  
 Rack travel in mm : 5.2...5.4  
 Del. quantity cm<sup>3</sup>/ : 0.5...0.6  
 100 s : (0.4...0.9)  
 Spread cm<sup>3</sup> : 0.1  
 100 s : (0.1)

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1000  
 Aneroid pressure h : 1100  
 Del. quantity : 38.0...39.0  
 1000 : (37.0...40.0)  
 Spread cm<sup>3</sup> : 2.50  
 1000 : (3.00)

**RATED SPEED**

1st version  
 Control lever  
 position degrees: 50...0  
 3rd rack travel in: 7,1...7,6  
 Speed rpm : 2100  
 4th rack travel in: 2500  
 Speed rpm : 0.00...1.00

**SET IDLE CONTROL LEVER POSITION**

Speed rpm : 1000  
 Rack travel in mm : 1.4...1.5

**LOW IDLE 1**

Control lever  
 position degrees: 12...16  
 Setting point w/out bumper spring

Speed rpm : 350  
Rack travel in mm : 5.3

Testing:

Speed rpm : 250  
Minimum rack travel: 9.20  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 3.00  
Speed rpm : 470...570  
Speed rpm : 1000  
Maximum rack travel: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 4.2...4.4  
                  : (4.1...4.5)

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 1400  
Rack travel in m: 12.10...12.40  
3rd speed rpm : 1900  
Rack travel in m: 11.60...11.90  
4th speed rpm : 500  
Rack travel in m: 12.20...12.40 \*  
5th speed rpm : 800  
Rack travel in m: 12.40...12.60\*\*

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000  
  
1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del.quantity cm3/ : 38.0...39.5  
                  1000 s: (37.0...40.5)  
Spread cm3 : 2.50  
                  1000 s: (3.0)  
Aneroid pressure h: 1100

Speed rpm : 1900  
Del.quantity cm3/ : 39.5...41.5  
                  1000 s: (38.5...42.5)  
Spread cm3 : 2.50  
                  1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 500  
Del.quantity cm3/ : 34.5...36.0  
                  1000 s: (33.5...37.0)  
Spread cm3 : 2.50  
                  1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 800  
Del.quantity cm3/ : 36.5...38.0  
                  1000 s: (35.5...39.0)  
Spread cm3 : 2.50  
                  1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 52.0  
                  1000 s: -  
Rack travel in mm : 20.1

HIGH IDLE

1st version  
Aneroid pressure h: 1100  
Speed rpm : 2100  
Rack travel in mm : 7.10...7.60  
Del.quantity cm3/ : 22.0...26.0  
                  1000 s: (21.0...27.0)  
Spread cm3 : 2.50  
                  1000 s: (3.00)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 5.0...6.0  
                  1000 s: (4.5...9.0)  
Spread cm3 : 1.00  
                  1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE  
(ELA)

Speed rpm : 400  
Rack travel in mm : (5.4...7.0)  
Del.quantity cm3/ : -  
                  1000 s: (5.0...13.0)  
Vacuum hPa : 400

Remarks: :

Pin projection = 16.60...16.70 mm

CHECKING THE PNEUMATIC SHUTOFF BOX  
-Control lever up against idle stop.  
At  $n = 350$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $15.3^\circ \dots 15.7^\circ$   
( $15.2 \dots 15.8^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

\* Setting point for negative torque  
control - negative retainer behind  
\*\* Reference measurement:  
Control-rod travel and delivery too  
large - position spiral spring  
downwards



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.9 D4  
 Edition : 13.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 957  
 Injection pump  
 Pump designation : PESSM55C32ORS168  
 EP type number : 0 410 055 978  
 Governor  
 Governor design. : RSF350/2000M69-2  
 Governor no. : 0 420 021 103

Customer-spec. information  
 Customer : DB

Engine : OM602-2.9l

1st version kW : 72.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 20.00...22.00  
 Firing order : 1- 2- 4- 5- 3

E09

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000  
 -----  
 Rack travel in mm : 12.50...12.60  
 -----  
 Del. quantity cm<sup>3</sup>/ : 3.8...3.9  
 -----  
 100 s : (3.7...4.0)  
 -----  
 Spread cm<sup>3</sup> : 0.2  
 -----  
 100 s : (0.3)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 5.2...5.4  
 Del. quantity cm<sup>3</sup>/ : 0.5...0.6  
 100 s : (0.4...0.9)  
 Spread cm<sup>3</sup> : 0.1  
 100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1100  
 Del. quantity : 38.0...39.0  
 1000 : (37.0...40.0)  
 Spread cm<sup>3</sup> : 2.50  
 1000 : (3.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 50...0  
 3rd rack travel in: 7.1...7.6  
 Speed rpm : 2200  
 4th rack travel in: 2500  
 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000  
 Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever  
 position degrees: 12...16  
 Setting point w/out bumper spring

Speed rpm : 350  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 250  
Minimum rack trave: 9.20  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 3.00  
Speed rpm : 470...570  
Speed rpm : 1000  
Maximum rack trave: 1.50

#### SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 4.2...4.4  
: (4.1...4.5)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 1400  
Rack travel in m: 12.10...12.40  
3rd speed rpm : 2000  
Rack travel in m: 11.60...11.90  
4th speed rpm : 500  
Rack travel in m: 12.20...12.40 \*  
5th speed rpm : 800  
Rack travel in m: 12.40...12.60\*\*

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del.quantity cm3/ : 38.0...39.5  
1000 s: (37.0...40.5)  
Spread cm3 : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1100

Speed rpm : 2000  
Del.quantity cm3/ : 39.5...41.5  
1000 s: (38.5...42.5)  
Spread cm3 : 2.50  
1000 s: (3.00)

Aneroid pressure h: 1100  
Speed rpm : 500  
Del.quantity cm3/ : 34.5...36.0 \*  
1000 s: (33.5...37.0) \*  
Spread cm3 : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 800  
Del.quantity cm3/ : 36.5...38.0 \*\*  
1000 s: (35.5...39.0) \*\*  
Spread cm3 : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2200  
Rack travel in mm : 7.10...7.60  
Del.quantity cm3/ : 22.0...26.0  
1000 s: (21.0...27.0)  
Spread cm3 : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 5.0...6.0  
1000 s: (4.5...9.0)  
Spread cm3 : 1.00  
1000 s: (1.50)

#### SETTING PNUEUMATIC FAST IDLE (ELA)

Speed rpm : 400  
Rack travel in mm : (5.4...7.0)  
Del.quantity cm3/ : -  
1000 s: (5.0...13.0)  
Vacuum hPa : 400

Remarks:

Pin projection = 16.60...16.70 mm

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At  $n = 350$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Start-of-delivery sensor system:  
adjustment and blocking with device  
 $KDEP 1077 = 15.3^\circ \dots 15.7^\circ$   
( $15.2 \dots 15.8^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

\* Setting point for negative torque  
control - negative retainer behind

\*\* Reference measurement:

Control-rod travel and delivery too  
large - position spiral spring  
downwards

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3,0 W27  
 Edition : 06.10.89  
 Replaces : 19.07.89  
 Test oil : ISO-4113

Combination no. : 0 400 076 961

Injection pump  
 Pump designation : PES6M55C32ORS157-1  
 EP type number : 0 410 056 991  
 Governor  
 Governor design. : RSF315/2300M65-5  
 Governor no. : 0 420 021 145

Customer-spec. information  
 Customer : MB-PKW

Engine : OM603A-ECE

1st version kW : 110.0

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del. quantity cm<sup>3</sup>/ : 5.1...5.2

100 s : (5.0...5.3)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.5...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1850

Del. quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees : 50...0

3rd rack travel in : 8,1...8,5

Speed rpm : 2500

4th rack travel in : 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

## LOW IDLE 1

Control lever

position degrees : 8...12

Setting point w/out bumper spring

Speed rpm : 290  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 290  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.50  
Speed rpm : 510...610  
Speed rpm : 1000  
Maximum rack travel: 1.80

#### SET IDLE AUXILIARY SPRING

Speed rpm : 360  
Rack travel in mm : 4,2...4,4  
: (4,1...4,5)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 1600  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 2200  
Rack travel in m: 12.30...12.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.50...0.90

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 1050  
Rack travel in m: 3.90...4.10  
2nd pressure hPa : 750  
Rack travel in m: 5.80...6.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del. quantity cm<sup>3</sup>/ : 50.0...51.5  
1000 s: (49.0...52.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 48.5...50.5  
1000 s: (47.5...51.5)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1050  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 33.0...34.0  
1000 s: (32.0...35.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

1st version  
Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.10...8.50  
Del. quantity cm<sup>3</sup>/ : 29.0...33.0  
1000 s: (28.0...34.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 290  
Rack travel in mm : 5.30...5.50  
Del. quantity cm<sup>3</sup>/ : 5.5...6.5  
1000 s: (5.0...9.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 315  
Rack travel in mm : (12,8...14,2)  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (42,0...49,0)  
Current A : 1,8  
Control lever at full-load stop  
Speed rpm : 2950  
Rack travel in mm : 0,0...1,0  
Current  
short-duration A : 3,0  
Starting test  
Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

#### CORRECTION OF INJECTED-FUEL QUANTITY

- Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

#### CHECKING THE PNEUMATIC SHUTOFF BOX

- Control lever up against idle stop. At  $n = 290$  1/min and  $p_u = 450$  mbar control rod must move briskly to control-rod travel = 0 mm

#### Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 =  $19.3^\circ \dots 19.7^\circ$

( $19.2 \dots 19.8^\circ$ ) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max.  $1^\circ$  angular displacement of cam

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

- Control-lever position  $44.5^\circ$  max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
- Control-lever position  $42.0^\circ$ , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 W28  
 Edition : 06.10.89  
 Replaces : 19.07.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 076 962  
 Injection pump  
 Pump designation : PES6M55C32ORS157  
 EP type number : 0 410 056 993  
 Governor  
 Governor design. : RSF315/2300M64-15  
 Govenner no. : 0 420 021 143

Customer-spec. information  
 Customer : MB-PKW

Engine : OM603A-Abgasl.

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del. quantity cm<sup>3</sup>/ : 5.1...5.2

100 s : (5.0...5.3)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.5...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del. quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,1...8,5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 290  
Rack travel in mm : 5.4

Testing:

Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 290  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.50  
Speed rpm : 510...610  
Speed rpm : 1000  
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 360  
Rack travel in mm : 4,2...4,4  
: (4,1...4,5)

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 1600  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 2200  
Rack travel in m: 12.30...12.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050  
Rack travel in m: 3.90...4.10  
2nd pressure hPa : 750  
Rack travel in m: 5.80...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del. quantity cm<sup>3</sup>/ : 50.0...51.5  
1000 s: (49.0...52.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 48.5...50.5  
1000 s: (47.5...51.5)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1050  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 33.0...34.0  
1000 s: (32.0...35.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

HIGH IDLE

1st version

Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.10...8.50  
Del. quantity cm<sup>3</sup>/ : 29.0...33.0  
1000 s: (28.0...34.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

LOW IDLE

Speed rpm : 290  
Rack travel in mm : 5.30...5.50  
Del. quantity cm<sup>3</sup>/ : 5.5...6.5  
1000 s: (5.0...9.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE  
REGULATION (ELR)

Control lever at idle stop

Speed rpm : 315  
Rack travel in mm : (12,8...14,2  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (42,0...49,0)

Current A : 1,8  
Control lever at full-load stop  
Speed rpm : 2950  
Rack travel in mm : 0,0...1,0

Current  
short-duration A : 3,0

Starting test

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm



load stop; voltage value of 3.230...  
3.310 V must be attained.

#### CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm  
control-rod travel at correction  
screw on ALDA pressure box.

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $44,5^{\circ}$  max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
-Control-lever position  $42,0^{\circ}$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

#### CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At  $n = 290$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDÉP 1077 =  $19,3^{\circ}$ ... $19,7^{\circ}$   
( $19,2$ ... $19,8^{\circ}$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.  
Difference in start of delivery between  
max. and min. value = max.  $1^{\circ}$  angular  
displacement of cam

#### Testing and adjusting the control-rod- travel sensor with evaluation circuit

##### R2.1.3

##### Receiving inspection

Shift control lever to full-load stop.  
Set 13.5 V at stabilizer. Apply  
1850 hPa to ALDA. Run up to speed of  
1000 1/min; a voltage of 3.230...3.310  
(3.190...3.350) V must be displayed  
on the digital voltmeter.

#### Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel  
delivery at 23.0...24.0 (22.0...25.0)  
ccm/1000 strokes with control lever.  
Shift control-rod-travel sensor until  
 $U = 2.095$ ... $2.105$  ( $2.098$ ... $2.102$ ) V is  
indicated. Tighten fastening screws  
with 1...2 Nm. Control lever to full-

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 W37  
 Edition : 14.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 076 963  
 Injection pump  
 Pump designation : PES6M55C32ORS157-1  
 EP type number : 0 410 056 991  
 Governor  
 Governor design. : RSF450/2300M68-1  
 Governor no. : 0 420 021 141

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM603A (3.0l)

1st version kW : 100.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.10...13.20

Del. quantity cm<sup>3</sup>/ : 4.6...4.7

100 s: (4.5...4.8)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 450.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del. quantity : 46.5...47.5

1000 : (45.5...48.5)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,4...8,8

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 10...14

Setting point w/out bumper spring

Speed rpm : 450  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 250  
Minimum rack trave: 12.50  
Speed rpm : 450  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.50  
Speed rpm : 620...720  
Speed rpm : 1000  
Maximum rack trave: 2.00

#### SET IDLE AUXILIARY SPRING

Speed rpm : 500  
Rack travel in mm : 4,3...4,5  
: (4,2...4,6)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 1600  
Rack travel in m: 12.40...12.60  
3rd speed rpm : 2200  
Rack travel in m: 11.50...11.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1500  
Rack travel mm : 0.00...0.40

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 1050  
Rack travel in m: 2.70...2.90  
2nd pressure hPa : 750  
Rack travel in m: 4.40...4.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del. quantity cm<sup>3</sup>/ : 45.5...47.0  
1000 s: (44.5...48.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 44.0...46.0  
1000 s: (43.0...47.0)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1050  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 34.0...35.0  
1000 s: (33.0...36.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

1st version  
Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.40...8.80  
Del. quantity cm<sup>3</sup>/ : 29.0...33.0  
1000 s: (28.0...34.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 5.5...6.5  
1000 s: (5.0...9.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 500  
Rack travel in mm : (6,8...8,4  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (14,0...22,0)  
Vacuum hPa : 600

#### Remarks:

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY  
-Set max. change plus/minus 0.75 mm  
control-rod travel at correction  
screw on ALDA pressure box.

#### CHECKING THE IDLE-SPEED AUXILIARY

#### SPRING CUTOFF

- Control-lever position  $44,5^{\circ}$  max.  
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
- Control-lever position  $42,0^{\circ}$ ,  
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $19,3^{\circ} \dots 19,7^{\circ}$   
( $19,2 \dots 19,8^{\circ}$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.  
Difference in start of delivery between  
max. and min. value = max.  $1^{\circ}$  angular  
displacement of cam

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3.0 W29  
Edition : 06.10.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 076 964

Injection pump  
Pump designation : PES6M55C320RS171  
EP type number : 0 410 056 989  
Governor  
Governor design. : RSF315/2300M72-4  
Governor no. : 0 420 021 138

Customer-spec. information  
Customer : MB-PKW

Engine : OM603-ECE MJ90

1st version kW : 80.0

## TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 3.1...3.2

100 s : (3.0...3.3)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.3...7.5

Del. quantity cm<sup>3</sup>/ : 0.6...0.7

100 s : (0.6...1.0)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del. quantity : 31.0...32.0

1000 : (30.0...33.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

### 1st version

#### Control lever

position degrees : 50...0

3rd rack travel in : 9.0...9.4

Speed rpm : 2500

4th rack travel in : 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER

### POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

## LOW IDLE 1

### Control lever

position degrees : 12...16

Setting point w/out bumper spring

Speed rpm : 300  
Rack travel in mm : 7.4

#### Testing:

Speed rpm : 220  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.50  
Speed rpm : 620...720  
Speed rpm : 1000  
Maximum rack travel: 1.80

#### SET IDLE AUXILIARY SPRING

Speed rpm : 360  
Rack travel in mm : 5.8...6.0  
: (5.7...6.1)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 1400  
Rack travel in m: 12.30...12.50  
3rd speed rpm : 2200  
Rack travel in m: 12.00...12.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

#### Measurement

Speed 1/min : 1000  
1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del. quantity cm<sup>3</sup>/ : 31.0...32.5  
1000 s: (30.0...33.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1100  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 34.0...36.0  
1000 s: (33.0...37.0)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

1st version  
Aneroid pressure h: 1100  
Speed rpm : 2500  
Rack travel in mm : 9.00...9.40  
Del. quantity cm<sup>3</sup>/ : 22.0...26.0  
1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.30...7.50  
Del. quantity cm<sup>3</sup>/ : 6.5...7.5  
1000 s: (6.0...10.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 315  
Rack travel in mm : (12.5...13.9)  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (27.0...35.0)  
Current A : 1.8  
Control lever at full-load stop  
Speed rpm : 2950  
Rack travel in mm : 0.0...1.0  
Current  
short-duration A : 3.0  
Starting test  
Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52.0 / 1,8A

#### Remarks:

Pin projection = 16.60...16.70 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49<sup>o</sup>, max.  
0.2 mm control-rod travel deduction

allowable after switchover point (of starting cam) up to 1000 1/min.  
Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With  $n = 300$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

Start-of-delivery sensor system:  
adjustment and blocking with device  
 $KDEP 1077 = 19.3^\circ \dots 19.7^\circ$   
( $19.2 \dots 19.8^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.  
Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

#### ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At  $n$   
 $= 1000$  min.  $-1$ ,  $I = 2.5$  A, difference  
in delivery referenced to full-load  
delivery (6.3...8.3) ccm/1000 strokes.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3,0 W35  
Edition : 14.11.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 076 968  
  
Injection pump  
Pump designation : PES6M55C32ORS178  
EP type number : 0 410 056 986  
Governor  
Governor design. : RSF315/2125M64-13  
Governor no. : 0 420 021 128

Customer-spec. information  
Customer : MB-PKW

Engine : OM603A D35 USA

1st version kW : 100.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

E24

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.20...14.30

Del. quantity cm<sup>3</sup>/ : 5.8...5.9

100 s : (5.7...6.0)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 6.1...6.4

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.5...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1850

Del. quantity : 58.0...59.0

1000 : (57.0...60.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,0...7,4

Speed rpm : 2300

4th rack travel in: 2700

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

## LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring



Speed rpm : 290  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 290  
Rack travel in mm : 6.10...6.40  
Speed rpm : 1000  
Maximum rack travel: 2.00

SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 4,0...4,5  
: (3,9...4,6)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 1600  
Rack travel in m: 13.10...13.30  
3rd speed rpm : 2000  
Rack travel in m: 11.80...12.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.40...0.80

Measurement

Speed 1/min : 1000  
  
1st pressure hPa : 1050  
Rack travel in m: 3.50...3.70  
2nd pressure hPa : 750  
Rack travel in m: 5.00...5.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del. quantity cm<sup>3</sup>/ : 54.5...56.0  
1000 s: (53.5...57.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2000  
Del. quantity cm<sup>3</sup>/ : 49.0...51.0  
1000 s: (48.0...52.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1050

Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 38.0...39.0  
1000 s: (37.0...40.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

HIGH IDLE

1st version

Aneroid pressure h: 1850  
Speed rpm : 2300  
Rack travel in mm : 7.00...7.40  
Del. quantity cm<sup>3</sup>/ : 22.0...26.0  
1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

LOW IDLE

Speed rpm : 290  
Rack travel in mm : 6.10...6.40  
Del. quantity cm<sup>3</sup>/ : 5.5...6.5  
1000 s: (5.0...9.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE  
REGULATION (ELR)

Control lever at idle stop

Speed rpm : 315  
Rack travel in mm : (12,2...13,6)  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (42,0...50,0)

Current A : 1,8  
Control lever at full-load stop  
Speed rpm : 2700  
Rack travel in mm : 0,0...1,0

Current  
short-duration A : 3,0

Starting test

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

#### CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At  $n = 290$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $44,5^\circ$  max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
-Control-lever position  $42,0^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $17,3^\circ \dots 17,7^\circ$   
( $17,2 \dots 17,8^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

#### Testing and adjusting the control-rod- travel sensor with evaluation circuit R2.1.3

##### Receiving inspection

Shift control lever to full-load stop.  
Set 13.5 V at stabilizer. Apply  
1850 hPa to ALDA. Run up to speed of  
1000 1/min; a voltage of 3.230...3.310  
(3.190...3.350) V must be displayed  
on the digital voltmeter.

##### Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel  
delivery at 23.0...24.0 (22.0...25.0)  
ccm/1000 strokes with control lever.  
Shift control-rod-travel sensor until  
 $U = 2.095 \dots 2.105$  (2.098...2.102) V is  
indicated. Tighten fastening screws  
with 1...2 Nm. Control lever to full-  
load stop; voltage value of 3.230...  
3.310 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 W23  
 Edition : 14.11.89  
 Replaces : 17.02.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 076 971  
 Injection pump  
 Pump designation : PES6M55C320RS171  
 EP type number : 0 410 056 989  
 Governor  
 Governor design. : RSF315/2300M60-8  
 Governor no. : 0 420 021 114

Customer-spec. information  
 Customer : MB-PKW

Engine : OM603-ECE

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00x2.00x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 3.1...3.2

100 s : (3.0...3.3)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 7.1...7.3

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.5...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del. quantity : 31.0...32.0

1000 : (30.0...33.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever  
 position degrees : 50...0

3rd rack travel in : 9.0...9.4

Speed rpm : 2500

4th rack travel in : 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER  
 POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever  
 position degrees : 12...16

Setting point w/out bumper spring

Speed rpm : 290  
Rack travel in mm : 7.2

#### Testing:

Speed rpm : 220  
Minimum rack travel: 9.00  
Speed rpm : 290  
Rack travel in mm : 7.10...7.30  
Rack travel in mm : 2.50  
Speed rpm : 600...700  
Speed rpm : 1000  
Maximum rack travel: 1.80

#### SET IDLE AUXILIARY SPRING

Speed rpm : 360  
Rack travel in mm : 5.5...5.7  
                  : (5.4...5.8)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 1400  
Rack travel in m: 12.30...12.50  
3rd speed rpm : 2200  
Rack travel in m: 12.00...12.20

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

##### Measurement

Speed 1/min : 1000

1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del. quantity cm<sup>3</sup>/ : 31.0...32.5  
                  1000 s: (30.0...33.5)  
Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.0)  
Aneroid pressure h: 1100  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 34.0...36.0  
                  1000 s: (33.0...37.0)

Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
                  1000 s: -  
Rack travel in mm : 20.1

#### HIGH IDLE

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2500  
Rack travel in mm : 9.00...9.40  
Del. quantity cm<sup>3</sup>/ : 22.0...26.0  
                  1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
                  1000 s: (3.00)

#### LOW IDLE

Speed rpm : 290  
Rack travel in mm : 7.10...7.30  
Del. quantity cm<sup>3</sup>/ : 5.5...6.5  
                  1000 s: (5.0...9.5)  
Spread cm<sup>3</sup> : 1.00  
                  1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

##### Control lever at idle stop

Speed rpm : 315  
Rack travel in mm : (12.8...14.2)  
Del. quantity cm<sup>3</sup>/ : -  
                  1000 s: (28.0...36.0)

##### Current A : 1.8

##### Control lever at full-load stop

Speed rpm : 2950  
Rack travel in mm : 0.0...1.0  
Current

short-duration A : 3.0

##### Starting test

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52.0 / 1.8A

#### Remarks:

Pin projection = 16.60...16.70 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° max.  
0.2 mm control-rod travel deduction

allowable after switchover point (of starting cam) up to 1000 1/min.  
Control-lever position  $46.5^{\circ}$ ,  
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

#### CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At  $n = 290$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $19.3^{\circ} \dots 19.7^{\circ}$   
( $19.2 \dots 19.8^{\circ}$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.  
Difference in start of delivery between  
max. and min. value = max.  $1^{\circ}$  angular  
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 W24  
 Edition : 14.11.89  
 Replaces : 17.02.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 076 972  
 Injection pump  
 Pump designation : PES6M55C32ORS171  
 EP type number : 0 410 056 989  
 Governor  
 Governor design. : RSF315/2300M72-1  
 Governor no. : 0 420 021 115

Customer-spec. information  
 Customer : DB

Engine : OM603-ECE

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00  
 Firing order : 1- 5- 3- 6- 2- 4

F02

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.3...7.5

Del. quantity cm<sup>3</sup>/ : 0.6...0.7

100 s: (0.6...1.0)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 31.0...32.0

1000 : (30.0...33.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,0...9,4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 300  
Rack travel in mm : 7.4

Testing:

Speed rpm : 220  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.50  
Speed rpm : 620...720  
Speed rpm : 1000  
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 360  
Rack travel in mm : 5.8...6.0  
                  : (5.7...6.1)

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 1400  
Rack travel in m: 12.30...12.50  
3rd speed rpm : 2200  
Rack travel in m: 12.00...12.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000  
1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del. quantity cm<sup>3</sup>/ : 31.0...32.5  
1000 s: (30.0...33.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1100  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 34.0...36.0  
1000 s: (33.0...37.0)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 52.0  
1000 s: -  
Rack travel in mm : 20.1

HIGH IDLE

1st version

Aneroid pressure h: 1100  
Speed rpm : 2500  
Rack travel in mm : 9.00...9.40  
Del. quantity cm<sup>3</sup>/ : 22.0...26.0  
1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.30...7.50  
Del. quantity cm<sup>3</sup>/ : 6.5...7.5  
1000 s: (6.0...10.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE  
REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 315  
Rack travel in mm : (12.8...14.2)  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (28.0...36.0)  
Current A : 1.8  
Control lever at full-load stop  
Speed rpm : 2950  
Rack travel in mm : 0.0...1.0  
Current  
short-duration A : 3.0  
Starting test  
Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 52.0 / 1.8A

Remarks:

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY  
SPRING CUTOFF

-Control-lever position 49°, max.  
0.2 mm control-rod travel deduction

allowable after switchover point (of starting cam) up to 1000 1/min.  
Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With  $n = 300$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

#### Start-of-delivery sensor system:

adjustment and blocking with device  
KDEP 1077 =  $19.3^\circ \dots 19.7^\circ$   
( $19.2 \dots 19.8^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

#### ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At  $n = 1000$  min.  $-1$ ,  
 $I = 2.5$  A, difference in delivery referenced to full-load  
delivery (9.0...11.0) ccm/1000 strokes.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 W18  
 Edition : 14.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 076 996  
 Injection pump  
 Pump designation : PES6M55C32ORS155  
 EP type number : 0 410 056 997  
 Governor  
 Governor design. : RSF315/2300M62  
 Governor no. : 0 420 021 035

Customer-spec. information  
 Customer : DB

Engine : OM603-3.0

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 3.1...3.2

100 s : (3.0...3.3)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

2nd speed rpm : 290

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s : (0.5...0.9)

Spread cm<sup>3</sup> : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 0...50

3rd rack travel in: 7,80...8,20

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 290

Rack travel in mm : 5.5

Testing:

Speed rpm : 220  
Minimum rack travel: 7.00  
Speed rpm : 290  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 1.50  
Speed rpm : 620...720  
Speed rpm : 1000  
Maximum rack travel: 1.00

SET IDLE AUXILIARY SPRING

Speed rpm : 360  
Rack travel in mm : 4,20...4,40  
                          : (4,10...4,50)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 1800  
Rack travel in m: 10.90...11.10  
3rd speed rpm : 2200  
Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1800  
Del. quantity cm<sup>3</sup>/ : 34.0...35.5  
                          1000 s: (33.0...36.5)  
Spread cm<sup>3</sup> : 2.50  
                          1000 s: (3.00)  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 33.5...35.5  
                          1000 s: (32.5...36.5)  
Spread cm<sup>3</sup> : 2.50  
                          1000 s: 3.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 55.0  
                          1000 s: -  
Rack travel in mm : 20.10

HIGH IDLE

1st version

Speed rpm : 2500  
Rack travel in mm : 7.80...8.20  
Del. quantity cm<sup>3</sup>/ : 22.0...26.0  
                          1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
                          1000 s: (3.00)

LOW IDLE

Speed rpm : 290  
Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 5.5...6.5  
                          1000 s: (5.0...9.5)  
Spread cm<sup>3</sup> : 1.00  
                          1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 315  
Rack travel in mm : (12,6...14,0)  
Del. quantity cm<sup>3</sup>/ : -  
                          1000 s: (32,0...40,0)  
Current A : 1,8  
Control lever at full-load stop  
Speed rpm : 2950  
Rack travel in mm : (0,0...1,0)  
Current short-duration A : 3,0  
Starting test  
Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 55,0 / 1,8A

Remarks:

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 = 19.3°...19.7°  
(19.2...19.8°) angular displacement of  
cam following start of delivery of  
cylinder no. 1.  
Difference in start of delivery between  
max. and min. value = max. 1° angular  
displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At n = 290 1/min and pu = 450 mbar  
control rod must move briskly to  
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
Control-lever position 46.5°,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

Testing and adjusting the control-rod-travel sensor with evaluation circuit

R2.1.3

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 3.230...3.310 (3.190...3.350) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until  $U = 2.095...2.105$  (2.098...2.102) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 3.230...3.310 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 3,0 b 2  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 473 088  
 Injection pump  
 Pump designation : PES3A80D410RS1324-2  
 EP type number : 0 410 483 025  
 Governor  
 Governor design. : RSV325...900A7C602-1  
 L  
 Govenner no. : 0 420 232 388

Customer-spec. information  
 Customer : KHD

Engine : F3L912

1st version kW : 60.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

F08

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 880

Rack travel in mm : 11.60...11.70

Del. quantity cm<sup>3</sup>/ : 4.6...4.7

100 s : (4.5...4.9)

Spread cm<sup>3</sup> : 0.2

100 s : (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 8.2...8.4

Del. quantity cm<sup>3</sup>/ : 0.7...1.3

100 s : (0.5...1.4)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 880

Del. quantity : 46.5...47.5

1000 : (45.0...49.0)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 55...63

Testing:

1st rack travel in: 10.60

Speed rpm : 920...930

2nd rack travel in: 4.00

Speed rpm : 935...965  
3rd rack travel in: 4.00  
Speed rpm : 955...985  
4th rack travel in: 1145  
Speed rpm : 0.30...1.40

Generator set

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 475...535

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 880  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 500  
Rack travel in m: 13.00...13.10  
3rd speed rpm : 700  
Rack travel in m: 12.20...12.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 49.5...51.5  
1000 s: (47.5...53.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 920...930

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

F09

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 12,7 p2  
Edition : 14.07.89  
Replaces : 7.2.89  
Test oil : ISO-4113  
  
Combination no. : 0 400 648 141  
  
Injection pump  
Pump designation : PE8A95D410LS2608  
EP type number : 0 410 698 988  
Governor  
Governor design. : RQV300...1250AB1195L  
Governor no. : 0 420 212 172

Customer-spec. information  
Customer : KHD

Engine : F8L413F

1st version kW : 188.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 9.00...12.00

F10

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.40...10.50

Del. quantity cm<sup>3</sup>/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.7

Del. quantity cm<sup>3</sup>/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.30

2nd speed rpm : 500  
travel mm : 2.80...3.00

3rd speed rpm : 1000  
travel mm : 6.50...6.70

4th speed rpm : 1290  
travel mm : 8.60...8.80

5th speed rpm : 1375  
travel mm : 9.40...9.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 96.5...98.5

1000 : (94.5...100.5)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 47...55

#### Testing:

1st rack travel in: 9.40  
Speed rpm : 1290...1300  
2nd rack travel in: 4.50  
Speed rpm : 1360...1390  
4th rack travel in: 1500  
Speed rpm : 0.30...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70

#### CONSTANT REGULATION

Speed rpm : 375...485

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 500  
Rack travel in m: 10.90...11.00  
3rd speed rpm : 850  
Rack travel in m: 10.60...10.80  
4th speed rpm : 950  
Rack travel in m: 10.40...10.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 95.0...98.0  
1000 s: (92.5...100.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : KHD 12,7 t  
 Edition : 02.10.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 648 147

Injection pump  
 Pump designation : PE8A95D410LS2775  
 EP type number : 0 410 698 983  
 Governor  
 Governor design. : RQ300/1150AB1125-1L  
 Governor no. : 0 420 200 113

Customer-spec. information  
 Customer : KHD

Engine : F8L413F

1st version kW : 213.0  
 Rated speed : 2300

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1150

Rack travel in mm : 12.40...12.50

Del. quantity cm<sup>3</sup>/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 1150

Rack travel in mm : 18.50...20.10

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del. quantity : 117.0...119.0

1000 : (115.0...121.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 1150

Rack travel in mm : 19.3

Testing:

1st rack travel in: 11.40

Speed rpm : 1195...1210

2nd rack travel in: 4.00



Speed rpm : 1275...1305

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 460...500

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 650  
Rack travel in m: 12.90...13.00  
3rd speed rpm : 730  
Rack travel in m: 12.70...12.90  
4th speed rpm : 825  
Rack travel in m: 12.40...12.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 450  
Pressure hPa : 700  
Rack travel mm : 12.90...13.00

#### Measurement

Speed 1/min : 450

1st pressure hPa : -  
Rack travel in m: 11.90...12.00  
2nd pressure hPa : 480  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 400  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 650  
Del.quantity cm3/ : 119.5...122.5  
1000 s: (117.0...125.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm3/ : 95.0...97.0  
1000 s: (93.0...99.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1195...1210

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)

Remarks:

:

On activation of the starting solenoid,  
the start position must be reached.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MAN 15,0 d1  
 Edition : 15.08.89  
 Replaces : 10.2.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 649 240  
 Injection pump  
 Pump designation : PE10A95D520/SLS2604  
 EP type number : 0 410 699 993  
 Governor  
 Governor design. : RQV250...1150AB1189R  
 Governor no. : 0 420 213 102

Customer-spec. information

Customer : MAN  
 Engine : D2840 ME

1st version kW : 270.0  
 Rated speed : 2300

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27  
 Prestroke mm : 1.70...1.80  
 : (1.65...1.85)  
 Rack travel in mm : 9.00...12.00

Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

**BASIC SETTING**

1st speed rpm : 1150  
 -----  
 Rack travel in mm : 13.00...13.10  
 -----  
 Del. quantity cm<sup>3</sup>/ : 12.8...13.0  
 -----  
 100 s : (12.2...12.8)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.6)  
 -----  
 2nd speed rpm : 250.0  
 Rack travel in mm : 6.9...7.1  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s : (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 2.00...2.50  
 2nd speed rpm : 850  
 travel mm : 5.75...6.00  
 3rd speed rpm : 1150  
 travel mm : 7.50...7.90  
 4th speed rpm : 1300  
 travel mm : 9.25...9.75

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1230  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1150  
 Del. quantity : 128.0...130.0  
 1000 : (122.5...128.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:

1st rack travel in: 12.00  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1280...1310  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 8...16  
Speed rpm : 250  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 400...460

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 500  
Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min : 170 (190)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 15.90...16.50

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : KHD 15,8 c3  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 649 244  
 Injection pump  
 Pump designation : PE10A95D610/4LS2452  
 EP type number : 0 410 699 998  
 Governor  
 Governor design. : RQV300...1100AB1055-1L  
 Governor no. : 0 420 212 215

Customer-spec. information  
 Customer : KHD

Engine : F10L413F

1st version kW : 198.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27  
 Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1-10- 9- 4- 3- 6-  
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-  
 216-243-288-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1100  
 Rack travel in mm : 9.60...9.70  
 Del. quantity cm<sup>3</sup>/ : 8.6...8.8  
 100 s : (8.4...9.0)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.4...6.6  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s : (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.70...1.80  
 2nd speed rpm : 365  
 travel mm : 2.50...2.70  
 3rd speed rpm : 1550  
 travel mm : 8.40...8.60  
 4th speed rpm : 1230  
 travel mm : 9.10...9.50

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1130  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1100  
 Del. quantity : 86.0...88.0  
 1000 : (84.0...90.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 60...68

### Testing:

1st rack travel in: 8.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 12...20

### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

## CONSTANT REGULATION

Speed rpm : 315...365

## TORQUE CONTROL

Dimension a mm : 0.90  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.60...9.70  
2nd speed rpm : 750  
Rack travel in m: 10.50...10.60  
3rd speed rpm : 910  
Rack travel in m: 10.30...10.50  
4th speed rpm : 1000  
Rack travel in m: 9.80...10.00

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 95.5...98.5  
1000 s: (93.0...101.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 8.60  
Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 13.50...14.20

Remarks:

:

## APPLICATION

Wheel loader

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HAN 10,8 l1  
Edition : 20.10.89  
Replaces : 9.1.89  
Test oil : ISO-4113  
  
Combination no. : 0 400 676 191  
  
Injection pump  
Pump designation : PE6A95D32ORS2557-1  
EP type number : 0 410 696 980  
Governor  
Governor design. : RSV350...1100A8C2217  
-2R  
Governor no. : 0 420 233 221

Customer-spec. information  
Customer : HANOMAG

Engine : D964 T/670E

1st version kW : 123.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
: (2.10...2.30)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 10.10...10.20

Del. quantity cm<sup>3</sup>/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.7

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del. quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.10

Speed rpm : 1120...1130

2nd rack travel in: 4.00

Speed rpm : 1150...1180  
3rd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1340  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.50...6.70  
Rack travel in mm : 2.00  
Speed rpm : 510...570

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 500  
Rack travel in m: 11.10...11.20  
4th speed rpm : 880  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 83.5...86.5  
1000 s: (81.0...89.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1120...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,7 u  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 678 040  
 Injection pump  
 Pump designation : PE8A95D41QLS2608  
 EP type number : 0 410 698 988  
 Governor  
 Governor design. : RSV300...1325A8C1002  
 L  
 Governor no. : 0 420 232 310

Customer-spec. information  
 Customer : KHD

Engine : F8L413F

1st version kW : 188.0  
 Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 9.70...9.80

Del. quantity cm<sup>3</sup>/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

Del. quantity : 91.5...93.5

1000 : (89.5...95.5)

Spread cm<sup>3</sup> : 3.00

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 8.70

Speed rpm : 1365...1375



2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
4th rack travel in: 1575  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 310...370  
Speed rpm : 700  
Maximum rack trave: 1.00

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1325  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 500  
Rack travel in m: 10.00...10.10

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.70  
Speed rpm : 1365...1375

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 116.5...127.5  
1000 s: (113.5...130.5)  
Rack travel in mm : 14.00...14.40

#### HIGH IDLE

1st version  
Rack travel in mm : 3.90...4.10  
Spread cm3 : 10.00  
1000 s: (-)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 12,7 s  
Edition : 20.10.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 678 044  
  
Injection pump  
Pump designation : PE8A95D410LS2588  
EP type number : D 410 698 989  
Governor  
Governor design. : RSV300...1150ABC1002  
-1L  
Governor no. : 0 420 232 379

Customer-spec. information  
Customer : KHD

Engine : F8L413F

1st version kW : 157.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
: (1.45...1.55)

Rack travel in mm : 9.00...12.00  
Firing order : 1-8-7-2-6-5-4-3

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150  
-----  
Rack travel in mm : 9.50...9.60  
-----  
Del. quantity cm<sup>3</sup>/ : 7.9...8.1  
-----  
100 s: (7.7...8.3)  
-----  
Spread cm<sup>3</sup> : 0.35  
-----  
100 s: (0.6)  
-----

2nd speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s: (0.7...1.8)  
Spread cm<sup>3</sup> : 0.35  
100 s: (0.55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Del. quantity : 79.0...81.0  
1000 : (77.0...83.0)  
Spread cm<sup>3</sup> : 3.5  
1000 : (6.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 47...55

Testing:  
1st rack travel in: 8.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00

Speed rpm : 1210...1240  
3rd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1415  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.00  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 540...600

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9.50...9.60  
2nd speed rpm : 500  
Rack travel in m: 9.80...9.90  
3rd speed rpm : 740  
Rack travel in m: 9.60...9.80

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.50  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)

#### Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Compressor

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b 9  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 836 041

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -2

EP type number : 9 410 230 028

Governor

Governor design. : RQV350...1100AB1227-  
 1R

Governer no. : 0 420 213 113

Customer-spec. information

Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 157.0

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

F24

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 7.10...7.30

2nd speed rpm : 1150

travel mm : 7.50...7.90

3rd speed rpm : 1290

travel mm : 9.10...9.70

4th speed rpm : 350

travel mm : 1.10...1.50

5th speed rpm : 600

travel mm : 3.00...3.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1290

Rack travel in mm : 5.40...7.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100  
Aneroid pressure h: 900  
Del.quantity : 126.5...128.5  
1000 : (124.5...130.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (6.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

#### Testing:

1st rack travel in: 11.60  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1255...1285  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 565...625

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 405  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 535  
Rack travel in m: 11.80...12.20

#### START CUT-OUT

Speed 1/min : 260 (280)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 85.0...89.0  
1000 s: (83.0...91.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (160.0...190.0)  
Rack travel in mm : 15.30...15.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3914299

Set shutoff solenoid 0.5...1.5 mm  
before shutoff.

Start-of-delivery mark is at 7° after  
start of delivery.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 8,3 b 8  
 Edition : 28.09.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113

Combination no. : 0 400 836 042

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -2

EP type number : 9 410 230 028

Governor  
 Governor design. : RQV400...1250AB1235-  
 1R

Governer no. : 0 420 213 114

Customer-spec. information

Customer : C.D.C.

Engine : 6 CT

1st version kW : 150.0

Rated speed : 2500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

F26

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1250

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 11.0...11.3

100 s: (10.8...11.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1450

travel mm : 8.80...9.20

2nd speed rpm : 1300

travel mm : 7.60...7.80

3rd speed rpm : 400

travel mm : 1.50...1.90

4th speed rpm : 600

travel mm : 3.50...3.90

5th speed rpm : 300

travel mm : 0.50...0.90

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1310

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1250  
Aneroid pressure h: 700  
Del. quantity : 110.0...113.0  
1000 : (108.0...115.0)  
Spread cm<sup>3</sup> : 4.00  
1000 : (6.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...16

Testing:  
Speed rpm : 250  
Minimum rack travel: 7.60  
Speed rpm : 400  
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.20...11.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 280  
Rack travel in m: 10.50...10.70  
3rd pressure hPa : 320  
Rack travel in m: 10.80...11.20

#### START CUT-OUT

Speed 1/min : 320 (330)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 86.5...90.5  
1000 s: (84.5...92.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.00...5.20  
Del. quantity cm<sup>3</sup>/ : 15.5...19.5  
1000 s: (13.0...22.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

:  
Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 8,8 a 5  
Edition : 20.10.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 845 083  
  
Injection pump  
Pump designation : PESSA95D41ORS2417  
EP type number : 0 410 895 993  
Governor  
Governor design. : RQV450..1250AB1211-2  
L  
Governor no. : 0 420 212 220

Customer-spec. information  
Customer : KHD

Engine : F5L413FR

1st version kW : 103.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.00...10.10

Del. quantity cm<sup>3</sup>/ : 9.9...10.0

100 s: (9.7...10.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 450  
travel mm : 1.30...1.40

2nd speed rpm : 500  
travel mm : 2.50...2.60

3rd speed rpm : 550  
travel mm : 3.20...3.30

4th speed rpm : 1295  
travel mm : 8.80...8.90

5th speed rpm : 1360  
travel mm : 9.60...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 99.0...100.0

1000 : (97.0...102.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)



## RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 9.00  
Speed rpm : 1290...1300  
2nd rack travel in: 4.50  
Speed rpm : 1345...1375  
4th rack travel in: 1475  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 15...23

Testing:  
Speed rpm : 200  
Minimum rack travel: 10.00  
Speed rpm : 450  
Rack travel in mm : 5.30...5.50

## CONSTANT REGULATION

Speed rpm : 475...550

## TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 550  
Rack travel in m: 10.30...10.40  
3rd speed rpm : 665  
Rack travel in m: 10.20...10.30  
4th speed rpm : 790  
Rack travel in m: 10.00...10.20

## START CUT-OUT

Speed 1/min : 370 (390)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 550  
Del. quantity cm<sup>3</sup>/ : 91.5...94.5  
1000 s: (89.0...97.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.00  
Speed rpm : 1290...1300

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 14.10...14.30

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,7 N 11  
Edition : 21.1.88  
Replaces : 12.9.86  
Test oil : ISO-4113  
  
Combination no. : 0 400 846 336  
  
Injection pump  
Pump designation : PES6A90D410RS2293W  
EP type number : 0 410 896 049  
Governor  
Governor design. : RQV300...1425AB740L  
Governor no. : 0 420 212 037

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 352A

1st version kW : 115.0  
Rated speed : 2850

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.15...2.25  
: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-4-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del. quantity cm<sup>3</sup>/ : 7.1...7.2

100 s : (6.9...7.4)

Spread cm<sup>3</sup> : 0.30

100 s : (0.45)

2nd speed rpm : 300  
Rack travel in mm : 7.50...7.70  
Del. quantity cm<sup>3</sup>/ : 0.9...1.5  
100 s : (0.7...1.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.70...2.20

2nd speed rpm : 550  
travel mm : 2.70...3.00

3rd speed rpm : 775  
travel mm : 4.10...4.60

4th speed rpm : 950  
travel mm : 5.20...5.50

5th speed rpm : 1460  
travel mm : 8.40...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 71.5...72.5

1000 : (69.5...74.5)

Spread cm<sup>3</sup> : 3.0

1000 : (4.5)

## RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1455...1465  
2nd rack travel in: 4.00  
Speed rpm : 1560...1590  
4th rack travel in: 1700  
Speed rpm : 0.00...1.00

LOW IDLE ?  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.10  
Speed rpm : 300  
Rack travel in mm : 7.50...7.70

CONSTANT REGULATION  
Speed rpm : 370...520

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1455...1465

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 71.0...81.0  
1000 s: (68.0...84.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 p 1  
Edition : 08.09.89  
Replaces : 15.12.88  
Test oil : ISO-4113

Combination no. : 0 400 846 537

Injection pump  
Pump designation : PES6A95D32ORS2693Z  
EP type number : 0 410 896 913  
Governor  
Governor design. : RQ300/1300AB1204R  
Governor no. : 0 420 201 640

Customer-spec. information  
Customer : DAF

Engine : DNS 620

1st version kW : 150.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del. quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del. quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.70  
Speed rpm : 1345...1360  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:

Speed rpm : 100  
Minimum rack travel: 7.30  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 535...575

TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 850  
Rack travel in m: 13.00...13.40  
3rd speed rpm : 965  
Rack travel in m: 12.70...13.10  
4th speed rpm : 1060  
Rack travel in m: 12.10...12.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 290  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 265  
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 1290  
Del. quantity cm3/ : 86.0...88.0  
1000 s: (83.5...90.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm3/ : 65.0...67.0  
1000 s: (63.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 130.0...145.0  
1000 s: (127.0...148.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del. quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

When adjusting the governor, observe  
service information on microcard  
W-400/008/D15

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 p 2  
Edition : 08.09.89  
Replaces : 14.6.89  
Test oil : ISO-4113  
Combination no. : 0 400 846 538  
Injection pump  
Pump designation : PES6A95D32ORS2693  
EP type number : 0 410 896 914  
Governor  
Governor design. : RQ300/1300AB1204R  
Governor no. : 0 420 201 640

Customer-spec. information  
Customer : DAF

Engine : DNT 620

1st version kW : 130.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 7.50...10.50

G06

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.50...11.60

Del. quantity cm<sup>3</sup>/ : 7.6...7.8

100 s: (7.4...8.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del. quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del. quantity : 76.0...78.0

1000 : (74.0...80.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 20.0

Testing:  
1st rack travel in: 9.70  
Speed rpm : 1350...1365  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.30  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 525...565

#### TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 850  
Rack travel in m: 12.00...12.40  
3rd speed rpm : 935  
Rack travel in m: 11.70...12.10  
4th speed rpm : 1080  
Rack travel in m: 11.00...11.30

#### Aneroid/Altitude Compensator Test

#### 1st version

#### Setting

Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.50...11.60

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 250  
Rack travel in m: 11.40...11.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

G07

Aneroid pressure h: 700  
Speed rpm : 1290  
Del. quantity cm<sup>3</sup>/ : 72.0...74.0  
1000 s: (69.5...76.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 65.0...67.0  
1000 s: (63.0...69.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1350...1365

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...145.0  
1000 s: (127.0...148.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del. quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p  
Edition : 14.07.89  
Replaces : 30.5.88  
Test oil : ISO-4113

Combination no. : 0 400 846 539

Injection pump  
Pump designation : PES6A95D32ORS2693  
EP type number : 0 410 896 914  
Governor  
Governor design. : RQ300/1300AB1205R  
Governor no. : 0 420 201 642

Customer-spec. information  
Customer : DAF

Engine : DNTD 620

1st version kW : 110.0  
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 7.50...10.50

G08

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.80...10.90

Del. quantity cm<sup>3</sup>/ : 6.4...6.6

100 s: (6.2...6.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.7...6.9

Del. quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del. quantity : 64.0...66.0

1000 : (62.0...68.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 20.0



Testing:

1st rack travel in: 9.30  
Speed rpm : 1335...1350  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.8

Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 550...590

TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 850  
Rack travel in m: 11.10...11.50  
3rd speed rpm : 970  
Rack travel in m: 10.80...11.20  
4th speed rpm : 1050  
Rack travel in m: 10.50...10.80

START CUT-OUT

Speed i/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1290  
Del.quantity cm3/ : 69.0...71.0  
1000 s: (66.5...73.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1335...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...145.0  
1000 s: (127.0...148.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 m 1  
 Edition : 08.09.89  
 Replaces : 10.85  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 545  
 Injection pump  
 Pump designation : PES6A95D41ORS2681  
 EP type number : 0 410 896 918  
 Governor  
 Governor design. : RQV300...1150AB1217L  
 Governor no. : 0 420 212 186

Customer-spec. information  
 Customer : KHD

Engine : F6L413FRW

1st version kW : 102.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27  
 Prestroke mm : 1.50...1.60  
 : (1.45...1.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150  
 -----  
 Rack travel in mm : 8.30...8.40  
 -----  
 Del. quantity cm<sup>3</sup>/ : 7.2...7.4  
 -----  
 100 s : (7.0...7.6)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.6)  
 -----  
 2nd speed rpm : 300.0  
 Rack travel in mm : 6.4...6.6  
 Del. quantity cm<sup>3</sup>/ : 1.3...1.7  
 100 s : (1.0...1.9)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.30...1.50  
 2nd speed rpm : 500  
 travel mm : 3.40...3.60  
 3rd speed rpm : 800  
 travel mm : 5.20...5.60  
 4th speed rpm : 1150  
 travel mm : 7.80...8.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1200  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del. quantity : 72.0...74.0  
 1000 : (70.0...76.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 7.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION  
Speed rpm : 320...415

TORQUE CONTROL  
Dimension a mm : 1.40  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 8.30...8.40  
2nd speed rpm : 500  
Rack travel in m: 9.70...9.80  
3rd speed rpm : 840  
Rack travel in m: 9.30...9.50  
4th speed rpm : 1010  
Rack travel in m: 8.60...8.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 80.5...83.5  
1000 s: (78.0...86.0)  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 98.5...101.5  
1000 s: (96.0...104.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 7.30  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 14.40...14.80

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

2. Set fuel delivery in fuel-delivery  
characteristics with stop above the  
governor housing.

#### APPLICATION

Below-ground operation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 5,9 a 4  
 Edition : 01.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 553  
 Injection pump  
 Pump designation : PES6A90D41ORS2713  
 EP type number : 0 410 896 083  
 Governor  
 Governor design. : RQV300...1350AB1175-4L  
 Governor no. : 0 420 212 197

Customer-spec. information  
 Customer : FIAT-AUTO

Engine : 8060.25.662

1st version kW : 96.0  
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.20...2.30  
 : 2.15...2.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 6.6...6.7

100 s : (6.4...6.9)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 9.7...9.9

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s : (1.0...2.0)

Spread cm<sup>3</sup> : 0.2

100 s : (0.4)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.90...1.10

2nd speed rpm : 435

travel mm : 2.40...2.60

3rd speed rpm : 780

travel mm : 4.20...4.40

4th speed rpm : 1400

travel mm : 8.10...8.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h: 700

Del. quantity : 66.5...67.5

1000 : (64.5...69.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:

1st rack travel in: 10.70  
Speed rpm : 1390...1400  
2nd rack travel in: 4.00  
Speed rpm : 1515...1545  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 14...21

Testing:

Speed rpm : 100  
Minimum rack travel: 11.30  
Speed rpm : 300  
Rack travel in mm : 9.70...9.90

CONSTANT REGULATION

Speed rpm : 350...450

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1350  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 500  
Rack travel in m: 11.70...11.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.50...11.60  
2nd pressure hPa : 210  
Rack travel in m: 11.60...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 56.0...58.0  
1000 s: (53.5...60.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 44.0...46.0  
1000 s: (42.0...48.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 110.0...120.0  
1000 s: (107.0...123.0)  
Rack travel in mm : 18.10...18.50

Remarks:

:  
Test electrically-released starting  
quantity (EES) with 12 volts

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 8,4 b 1  
 Edition : 25.08.89  
 Replaces : 2.11.87  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 562  
 Injection pump  
 Pump designation : PES6A100D41ORS2687  
 EP type number : 0 410 806 001  
 Governor  
 Governor design. : RQV400...1000AB1231L  
 Governor no. : 0 420 212 206

Customer-spec. information  
 Customer : LIEBHERR

Engine : D906T

1st version kW : 170.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.30...13.40

Del. quantity cm<sup>3</sup>/ : 13.6...13.8

100 s : (13.4...14.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.8...7.0

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s : (0.7...1.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 440

travel mm : 2.10...2.30

2nd speed rpm : 500

travel mm : 3.00...3.50

3rd speed rpm : 585

travel mm : 3.50...4.00

4th speed rpm : 1045

travel mm : 8.10...8.20

5th speed rpm : 1135

travel mm : 9.40...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1065

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700  
Del. quantity : 136.5...138.5  
1000 : (134.5...140.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 12.30  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.30  
Speed rpm : 400  
Rack travel in mm : 6.80...7.00

CONSTANT REGULATION  
Speed rpm : 425...530

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.30...13.40  
2nd speed rpm : 500  
Rack travel in m: 13.30...13.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.30...13.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 435  
Rack travel in m: 12.90...13.00  
3rd pressure hPa : 410  
Rack travel in m: 12.40...12.60

#### START CUT-OUT

Speed 1/min : 320 (340)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 100.0...102.0  
1000 s: (98.0...104.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.30  
Speed rpm : 1040...1050

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 115.0...125.0  
1000 s: (112.0...128.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.80...7.00  
Del. quantity cm<sup>3</sup>/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 m  
 Edition : 28.09.89  
 Replaces : 20.12.88  
 Test oil : ISO-4113

Combination no. : 0 400 846 566

Injection pump  
 Pump designation : PES6A95D320RS2770  
 EP type number : 0 410 896 905  
 Governor  
 Governor design. : RQV350...1300AB1242R  
 Governor no. : 0 420 213 110

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT 466

1st version kW : 138.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 8.3...8.5

100 s: (8.1...8.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 7.30...7.50

2nd speed rpm : 1460  
 travel mm : 8.10...8.50

3rd speed rpm : 550  
 travel mm : 3.10...3.70

4th speed rpm : 350  
 travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1510  
 Rack travel in mm : 6.60...9.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1300  
 Del. quantity : 83.5...85.5  
 1000 : (81.5...87.5)



Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 44...52

#### Testing:

1st rack travel in: 10.70  
Speed rpm : 1345...1375  
2nd rack travel in: 4.00  
Speed rpm : 1470...1480  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 460...520

#### CONSTANT REGULATION

Speed rpm : 360...460

#### START CUT-OUT

Speed 1/min : 270 (280)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1345...1375

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.50...5.70  
Del. quantity cm3/ : 17.0...21.0  
1000 s: (14.5...23.5)

Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

: NAVISTAR #  
Adjust shutoff device to 0.5...1.5 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 d 2  
 Edition : 15.08.89  
 Replaces : 27.10.88  
 Test oil : ISO-4113

Combination no. : 0 400 846 567

Injection pump  
 Pump designation : PES6A90D41ORS2710  
 EP type number : 0 410 896 082  
 Governor  
 Governor design. : RQV300...1400AB1065-16L  
 Governor no. : 0 420 212 214

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 82.0  
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35  
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.10...10.20

Del. quantity cm<sup>3</sup>/ : 5.3...5.4

100 s: (5.1...5.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.9...9.1

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.80...1.30

2nd speed rpm : 500  
 travel mm : 2.30...2.80

3rd speed rpm : 750  
 travel mm : 4.10...4.30

4th speed rpm : 1500  
 travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1400  
 Del. quantity : 53.0...54.0  
 1000 : (51.0...56.0)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 57...65

Testing:  
 1st rack travel in: 9.10

Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1530...1560  
4th rack travel in: 1700  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed rpm : 100  
Minimum rack trave: 10.30  
Speed rpm : 300  
Rack travel in mm : 8.90...9.10

#### CONSTANT REGULATION

Speed rpm : 500...700

#### TORQUE CONTROL

Dimension a mm : 1.00  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 500  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 900  
Rack travel in m: 10.70...11.00  
4th speed rpm : 1100  
Rack travel in m: 10.30...10.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm3/ : 39.0...41.0  
1000 s: (36.5...43.5)  
Speed rpm : 900  
Del.quantity cm3/ : 47.0...50.0  
1000 s: (44.5...52.5)  
Speed rpm : 1400  
Del.quantity cm3/ : 60.0...63.0  
1000 s: (58.0...65.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 17.00...17.40

#### Remarks:

:

Set shutoff stop to contact at  
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 m 1  
 Edition : 28.09.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 569  
 Injection pump  
 Pump designation : PES6A95D32ORS2770  
 EP type number : 0 410 896 905  
 Governor  
 Governor design. : RQV350...1350AB1236-3R  
 Governor no. : 0 420 213 112

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT 360

1st version kW : 127,0  
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350  
 -----  
 Rack travel in mm : 11.40...11.50  
 -----  
 Del. quantity cm<sup>3</sup>/ : 7.5...7.7  
 -----  
 100 s: (7.3...7.9)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 5.7...5.9  
 Del. quantity cm<sup>3</sup>/ : 1.3...1.7  
 100 s: (1.0...1.9)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 7.30...7.50  
 2nd speed rpm : 1460  
 travel mm : 8.10...8.50  
 3rd speed rpm : 550  
 travel mm : 3.10...3.70  
 4th speed rpm : 350  
 travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1535  
 Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1350  
 Aneroid pressure h: 900

Del. quantity : 75.0...77.0  
1000 : (73.0...79.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 46...54

Testing:  
1st rack travel in: 10.40  
Speed rpm : 1400...1430  
2nd rack travel in: 4.00  
Speed rpm : 1530...1540  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.40...11.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.60...8.90  
2nd pressure hPa : 240  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 480  
Rack travel in m: 10.70...11.10

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version

G21

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 52.0...56.0  
1000 s: (50.0...58.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1400...1430

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del. quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #  
: 1811834C93  
Adjust stop lever to 0.5...1.0 mm  
before stop.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : IHC 7,6 m 2  
 Edition : 28.09.89  
 Replaces : 7.4.89  
 Test oil : ISO-4113

Combination no. : 0 400 846 570

Injection pump  
 Pump designation : PES6A95D32ORS2770  
 EP type number : 0 410 896 905  
 Governor  
 Governor design. : RQV350...1350AB1236-2R

Governer no. : 0 420 213 111

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA-360

1st version kW : 134.0  
 Rated speed : 2700

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 2.80

Test nozzle holder assembly : 1 688 901 110

Opening pressure, bar : 250...253

Orifice plate diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1350

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 7.3...7.5

100 s: (7.1...7.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del. quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1350

travel mm : 7.30...7.50

2nd speed rpm : 1460

travel mm : 8.10...8.50

3rd speed rpm : 550

travel mm : 3.10...3.50

4th speed rpm : 350

travel mm : 1.30...1.70

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1535

Rack travel in mm : 6.70...9.30

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1350

Aneroid pressure h: 700

Del. quantity : 73.5...75.5  
1000 : (71.5...77.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 46...54

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1405...1435  
2nd rack travel in: 4.00  
Speed rpm : 1515...1525  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.80...6.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 170  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 300  
Rack travel in m: 10.10...10.50

#### START CUT-OUT

Speed 1/min : 280 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 55.0...59.0  
1000 s: (53.0...61.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1405...1435

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.80...6.00  
Del. quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #  
Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark is at start of  
delivery of cylinder 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : IHC 7,6 w  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 572  
 Injection pump  
 Pump designation : PES6A95D32ORS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1350AB1236-SR  
 Govenner no. : 0 420 213 115

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA 360

1st version kW : 138.0  
 Rated speed : 2700

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_ \_ \_

**BEGINNING OF DELIVERY**

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1350  
 -----  
 Rack travel in mm : 12.40...12.50  
 -----  
 Del. quantity cm3/ : 8.1...8.3  
 -----  
 100 s: (7.9...8.5)  
 -----  
 Spread cm3 : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 5.7...5.9  
 Del. quantity cm3/ : 1.3...1.7  
 100 s: (1.0...1.9)  
 Spread cm3 : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1350  
 travel mm : 7.30...7.50  
 2nd speed rpm : 1460  
 travel mm : 8.10...8.50  
 3rd speed rpm : 550  
 travel mm : 3.10...3.70  
 4th speed rpm : 350  
 travel mm : 1.30...1.70

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1465  
 Rack travel in mm : 11.50

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1350  
 Aneroid pressure h: 900



Del. quantity : 81.0...83.0  
1000 : (79.0...85.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1405...1435  
2nd rack travel in: 4.00  
Speed rpm : 1530...1540  
4th rack travel in: 1625  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 460...520

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.40...12.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 240  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 425  
Rack travel in m: 11.60...12.00

#### START CUT-OUT

Speed 1/min : 270 (280)

#### FUEL DELIVERY CHARACTERISTICS

G25

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 64.0...68.0  
1000 s: (62.0...70.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1405...1435

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del. quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #  
: 1815226C91  
Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark is at start of  
delivery of cylinder 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : IHC 7,6 w 1  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 573  
 Injection pump  
 Pump designation : PES6A95D32ORS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1350AB1236-6R  
 Governor no. : 0 420 213 116

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT 360

1st version kW : 127.0  
 Rated speed : 2700

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1350  
 -----  
 Rack travel in mm : 12.30...12.40  
 -----  
 Del. quantity cm<sup>3</sup>/ : 7.9...8.1  
 -----  
 100 s: (7.7...8.3)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 5.7...5.9  
 Del. quantity cm<sup>3</sup>/ : 1.3...1.7  
 100 s: (1.0...1.9)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**  
 1st speed rpm : 1350  
 travel mm : 7.30...7.50  
 2nd speed rpm : 1460  
 travel mm : 8.10...8.50  
 3rd speed rpm : 550  
 travel mm : 3.10...3.70  
 4th speed rpm : 350  
 travel mm : 1.30...1.70

**GUIDE SLEEVE POSITION**  
 Control-lever position  
 Degree: -1  
 Speed rpm : 1460  
 Rack travel in mm : 11.30

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1350  
 Aneroid pressure h: 900

Del. quantity : 79.0...81.0  
1000 : (77.0...83.0)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 44...52

#### Testing:

1st rack travel in: 11.30  
Speed rpm : 1400...1430  
2nd rack travel in: 4.00  
Speed rpm : 1525...1535  
4th rack travel in: 1625  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 460...520

#### CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 185  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 325  
Rack travel in m: 11.40...11.80

#### START CUT-OUT

Speed 1/min : 270 (280)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : 62.5...66.5  
1000 s: (60.5...68.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1400...1430

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del. quantity cm3/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

: NAVISTAR #  
: 1815265C91

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark is at start of  
delivery of cylinder 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : IHC 7,6 w 2  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 574  
 Injection pump  
 Pump designation : PES6A95D32ORS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1300AB1236-4R  
 Govenner no. : 0 420 213 117

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT 466

1st version kW : 138.0  
 Rated speed : 2600

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1300

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1350  
 travel mm : 7.30...7.50

2nd speed rpm : 1460  
 travel mm : 8.10...8.50

3rd speed rpm : 550  
 travel mm : 3.10...3.70

4th speed rpm : 350  
 travel mm : 1.30...1.70

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1405

Rack travel in mm : 12.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1300

Aneroid pressure h: 900

Del. quantity : 87.0...89.0  
1000 : (85.0...91.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 39...47

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1345...1375  
2nd rack travel in: 4.00  
Speed rpm : 1505...1515  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 460...520

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 175  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 340  
Rack travel in m: 12.40...12.80

#### START CUT-OUT

Speed 1/min : 270 (280)

#### FUEL DELIVERY CHARACTERISTICS

H01

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 85.5...89.5  
1000 s: (83.5...91.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1345...1375

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 15.90...16.10

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del. quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: NAVISTAR #  
: 1815266C91  
Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark is at start of  
delivery of cylinder 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : KHD 1 g 44  
 Edition : 20.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 575  
 Injection pump  
 Pump designation : PES6A95D41ORS2784  
 EP type number : 0 410 896 902  
 Governor  
 Governor design. : RQV300...1200AB1158-2L  
 Governor no. : 0 420 212 222

Customer-spec. information  
 Customer : KHD

Engine : BF6L913C

1st version kW : 125.0  
 Rated speed : 2400

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27  
 Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1250  
 Rack travel in mm : 13.90...14.00  
 Del. quantity cm<sup>3</sup>/ : 8.6...8.8  
 100 s : (8.4...9.0)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 7.9...8.1  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s : (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

(B) Setting of injection pump with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.20...1.30  
 2nd speed rpm : 340  
 travel mm : 1.70...1.90  
 3rd speed rpm : 390  
 travel mm : 2.20...2.30  
 4th speed rpm : 1245  
 travel mm : 8.90...9.00  
 5th speed rpm : 1305  
 travel mm : 10.20...10.30

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1230  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1250  
 Aneroid pressure h : 700  
 Del. quantity : 86.0...88.0  
 1000 : (84.0...90.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever

position degrees: 63...71

### Testing:

1st rack travel in: 12.90

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1290...1320

4th rack travel in: 1375

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever

position degrees: 14...22

### Testing:

Speed rpm : 200

Minimum rack travel: 10.00

Speed rpm : 300

Rack travel in mm : 7.90...8.10

## CONSTANT REGULATION

Speed rpm : 315...400

## TORQUE CONTROL

Dimension a mm : 1.10

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 13.90...14.00

2nd speed rpm : 825

Rack travel in m: 15.00...15.10

3rd speed rpm : 1005

Rack travel in m: 14.70...14.90

4th speed rpm : 1100

Rack travel in m: 14.20...14.40

Aneroid/Altitude

Compensator Test

### 1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 15.00...15.10

### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 13.00...13.10

2nd pressure hPa : 450

Rack travel in m: 14.60...14.70

3rd pressure hPa : 310

Rack travel in m: 13.50...13.70

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 700

Speed rpm : 825

Del. quantity cm<sup>3</sup>/ : 91.0...94.0

1000 s: (88.5...96.5)

Aneroid pressure h: -

Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 57.0...59.0

1000 s: (55.0...61.0)

## RACK STOP ADJUSTMENT

Speed rpm : 600

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.90

Speed rpm : 1240...1250

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 115.0...125.0

1000 s: (112.0...128.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

On activation of the starting solenoid,  
the start position must be reached.

## APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9,0 f 5  
 Edition : 28.8.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 848 021

Injection pump  
 Pump designation : PES8A75D320RS2463  
 EP type number : 0 410 879 989  
 Governor  
 Governor design. : RQV300...1500AB914DR

Customer-spec. information  
 Customer : IHC

Engine : DV 550 C

1st version kW : 147.2  
 Rated speed : 3000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Inlet press., bar : 2.4

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 1.95...2.05 \*  
 : (1.90...2.10)  
 Rack travel in mm : 10.70  
 Prestroke mm : \*\*  
 Rack travel in mm : 10.70  
 Firing order : 1-8-7-3-6-5-4-2

Phasing : 0-45-90-135-180-225-  
 280-315  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1500  
 -----  
 Rack travel in mm : 10.65...10.75  
 -----  
 Del. quantity cm<sup>3</sup>/ : 6.8...6.9  
 -----  
 100 s: (-)  
 -----  
 Spread cm<sup>3</sup> : 0.6  
 -----  
 100 s: (-)  
 -----  
 2nd speed rpm : 300  
 Rack travel in mm : 9.00...9.50  
 Del. quantity cm<sup>3</sup>/ : 0.1...1.5 \*  
 100 s: (-)  
 3rd speed rpm : 300  
 Rack travel in mm : 9.00...9.50  
 Del. quantity cm<sup>3</sup>/ : 3.7...4.6 \*\*  
 100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1600  
 Rack travel in mm : 15.00...18.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1500  
 Del. quantity : 68.0...69.0  
 1000 : (-)  
 Spread cm<sup>3</sup> : 6.0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 64...72

Testing:  
 1st rack travel in: 9.70  
 Speed rpm : 1600...1610  
 2nd rack travel in: 6.25  
 Speed rpm : 1785...1815  
 4th rack travel in: 2000  
 Speed rpm : 0.00...1.00

LOW IDLE 1  
 Control lever  
 position degrees: 6...14



Testing:

Speed rpm : 200  
Minimum rack trave: 7.40  
Speed rpm : 300  
Rack travel in mm : 5.40...7.30  
Rack travel in mm : 3.05  
Speed rpm : 440...460  
Speed rpm : 600  
Maximum rack trave: 2.60

START CUT-OUT

Speed 1/min : 150...230

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1600...1610

INTERMEDIATE RATED SPEED

Control lever

position degrees: 61...69  
Rack travel in mm : 16.30  
Speed rpm : 1490...1510  
Rack travel in mm : 7.55  
Speed rpm : 1740...1760

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 110.0...134.0\*\*  
1000 s: (-)  
Rack travel in mm : 21.00

HIGH IDLE

1st version

Speed rpm : 1650  
Rack travel in mm : 7.00...8.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 8.0...10.0 \*\*  
1000 s: (-)

Remarks:

\* = Cylinders 1,7,6 and 4

\*\* = Cylinders 2,8,3 and 5

Port opening at 3.95...4.00 mm plunger lift

Adjust stop lever to 0.5...1.0 mm before stop.

H05

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 15,0 c1  
 Edition : 27.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 858 006  
 Injection pump  
 Pump designation : PES8A9SD412LS2334  
 EP type number : 0 410 898 998  
 Governor  
 Governor design. : RQ250/1100AB793DL  
 Governor no. : 0 420 202 238

Customer-spec. information  
 Customer : MAN

Engine : D2858MZ-304PS

1st version kW : 223.7  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.70...1.80  
 : (1.65...1.75)

Rack travel in mm : 9.00...12.00

H06

Firing order : 1- 2- 7- 8- 4- 5-  
 6- 3

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 700

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 115.5...117.5

1000 : (113.5...119.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 700

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.10

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1195...1225

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack travel: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.15

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.10...11.20

2nd speed rpm : 500

Rack travel in m: 11.40...11.50

3rd speed rpm : 1135

Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : <121.0

1000 s: (<123.5)

Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 116.5...119.5

1000 s: (114.0...122.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 l 1  
 Edition : 28.09.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 129

Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -27R  
 Governor no. : 0 420 233 225

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 111.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

H08

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.70...9.80

Del. quantity cm<sup>3</sup>/ : 8.5...8.7

100 s : (8.3...8.9)

Spread cm<sup>3</sup> : 0.4

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 1.1...1.5

100 s : (0.9...1.8)

Spread cm<sup>3</sup> : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 8.70  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
3rd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 30...38  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 750  
Rack travel in m: 10.80...11.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 94.0...98.0  
1000 s: (92.0...100.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.70  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.30...5.50

Del. quantity cm<sup>3</sup>/ : 11.5...15.5  
1000 s: (9.0...18.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3912534

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 0.5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 8,3 l 3  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 1290A  
 Injection pump  
 Pump designation : PES6A1000320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400..1200ADC2190  
 Governor no. : 0 420 233

Customer-spec. information  
 Customer : C.D.C

Engine : 6 CT  
 1st version kW : 101.0  
 Rated speed : 2400

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 017  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,6  
 Test lines : 1 680 750 014  
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...3.00)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1200  
 -----  
 Rack travel in mm : 10.00...10.10  
 -----  
 Del. quantity cm<sup>3</sup>/ : 8.7...8.9  
 -----  
 100 s: (8.5...9.1)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----  
 2nd speed rpm : 400.0  
 Rack travel in mm : 5.4...5.6  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1200  
 Del. quantity : 87.5...89.5  
 1000 : (85.5...91.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

**RATED SPEED**

1st version  
 Control lever  
 position degrees: 54...62

Testing:  
 1st rack travel in: 9.00

Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1315...1345  
4th rack travel in: 1400  
Speed rpm : 0.30...0.70

#### LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 505...565

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 800  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 87.5...91.5  
1000 s: (85.5...93.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11<sup>0</sup> cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a65  
 Edition : 28.09.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 133

Injection pump  
 Pump designation : PES6A1000320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV500...1250AOC2190  
 -29R

Governer no. : 0 420 233 232

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA-I

1st version kW : 164.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00x2.00x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.90...12.00

Del. quantity cm<sup>3</sup>/ : 11.3...11.5

100 s: (11.1...11.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 500.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 113.0...115.0

1000 : (111.0...117.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:



1st rack travel in: 10.90  
Speed rpm : 1305...1315  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 500  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 510...570

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1305...1315

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 5.60...5.80  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915691

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 12° cam angle  
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a15  
 Edition : 28.09.89  
 Replaces : 7.4.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 134

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -31R

Governer no. : 0 420 233 233

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 156.6  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

H14

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 122.5...124.5

1000 : (120.5...126.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 11.30  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 28...36  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 485...545

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks: : C.D.C. # 3915978

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 8,3 a16  
 Edition : 28.09.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 135

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV500...1050A0C2190  
 -30R

Governer no. : 0 420 233 234

Customer-spec. information  
 Customer : C.D.C.

Engine : 6-CT-I 8.3 ltr

1st version kW : 123.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1050

Rack travel in mm : 10.70...10.80

Del. quantity cm<sup>3</sup>/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 500,0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1050

Del. quantity : 96.5...98.5

1000 : (94.5...100.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

**RATED SPEED**

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.70  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 31...39  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 500  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 570...630

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 12.10...12.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 116.0...120.0  
1000 s: (114.0...122.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 5.30...5.50  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915992

Adjustment without torque-control  
spring retainer with 0.5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 m 1  
Edition : 28.09.89  
Replaces : 7.4.89  
Test oil : ISO-4113

Combination no. : 0 400 866 138

Injection pump  
Pump designation : PES6A1000320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV425...750A4C2213-3R

Governor no. : 0 420 233 235

## Customer-spec. information

Customer : C.D.C.

Engine : 6CT- 8,3 L

1st version kW : 135.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 6.0...6.2

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 142.5...144.5

1000 : (140.5...146.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 13.00  
Speed rpm : 795...805  
2nd rack travel in: 4.00  
Speed rpm : 825...855  
3rd rack travel in: 4.00  
Speed rpm : 830...860  
4th rack travel in: 900  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 430...490

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 795...805

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 6.00...6.20  
Del. quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3914870

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a66  
 Edition : 28.09.89  
 Replaces : 7.4.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 140

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100A0C2190  
 -33R  
 Governor no. : 0 420 233 237

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3ltr

1st version kW : 174.5  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 12.70...12.80  
 -----  
 Del. quantity cm<sup>3</sup>/ : 12.6...12.8  
 -----  
 100 s: (12.4...13.0)  
 -----  
 Spread cm<sup>3</sup> : 0.4  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 400.0  
 Rack travel in mm : 5.5...5.7  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 126.5...128.5  
 1000 : (124.5...130.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

Testing:  
 1st rack travel in: 11.70  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00



Speed rpm : 1200...1230  
3rd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 445...505

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3915967

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 k 4  
Edition : 28.09.89  
Replaces : 2.5.89  
Test oil : ISO-4113  
  
Combination no. : 0 400 866 142  
  
Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1050AOC2216  
-4  
Governor no. : 0 420 233 239

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CT 8.3 ltr

1st version kW : 131.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

H22

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 106.0...108.0

1000 : (104.0...110.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.30  
Speed rpm : 1090...1100  
3rd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 750  
Rack travel in m: 12.30...12.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 120.0...124.0  
1000 s: (118.0...126.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del. quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915980

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 5,9 v  
 Edition : 25.08.89  
 Replaces : 24.5.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 143

Injection pump  
 Pump designation : PES6A95D12ORS2773  
 EP type number : 0 410 896 904  
 Governor  
 Governor design. : RSV350...1250AOC2237  
 R

Governer no. : 0 420 233 240

Customer-spec. information  
 Customer : CUMMINS

Engine : 6BT

1st version kW : 118.0  
 Rated speed : 2500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 2.10...2.20  
 : (2.05...2.25)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1250

Rack travel in mm : 9.40...9.50

Del. quantity cm<sup>3</sup>/ : 8.6...8.8

100 s: (8.3...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1250

Del. quantity : 86.0...88.0

1000 : (83.5...90.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 8.40

Speed rpm : 1290...1300

2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
3rd rack travel in: 4.00  
Speed rpm : 1365...1395  
4th rack travel in: 1530  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 465...525

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 500  
Rack travel in m: 9.40...9.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 71.5...74.5  
1000 s: (69.5...76.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 110.0...120.0  
1000 s: (107.0...123.0)  
Rack travel in mm : 14.10...14.50

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 10.0...16.0  
1000 s: (7.5...18.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 11.5° cam angle  
after start of delivery cyl. 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 8,3 a69  
 Edition : 28.09.89  
 Replaces : 7.4.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 146

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -36R  
 Governor no. : 0 420 233 243

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 138.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 27...29

H26

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 750.0

Rack travel in mm : 12.6...12.8

Del. quantity cm<sup>3</sup>/ : 12.5...12.9

100 s: (12.3...13.1)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1100

Del. quantity : 106.5...108.5

1000 : (104.5...110.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

**RATED SPEED**

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 10.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 480...540

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.80

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.70...5.90  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915952

Adjust stop lever to 0.5...1.0 mm  
before stop.

H27

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 L 8  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 150  
 Injection pump  
 Pump designation : PES6A1000320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -4SR  
 Governor no. : 0 420 233 253

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 134.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar : 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 10.90...11.00  
 -----  
 Del. quantity cm<sup>3</sup>/ : 10.1...10.3  
 -----  
 100 s : (9.9...10.5)  
 -----  
 Spread cm<sup>3</sup> : 0.4  
 -----  
 100 s : (0.6)  
 -----

2nd speed rpm : 400.0  
 Rack travel in mm : 5.3...5.5  
 Del. quantity cm<sup>3</sup>/ : 1.1...1.5  
 100 s : (0.9...1.8)  
 Spread cm<sup>3</sup> : 0.6  
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 101.5...103.5  
 1000 : (99.5...105.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 43...51

Testing:



1st rack travel in: 9.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 440...500

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 114.5...118.5  
1000 s: (112.5...120.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Del. quantity cm<sup>3</sup>/ : 11.5...15.5  
1000 s: (9.0...18.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks: : C.D.C. # 3915974

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 o  
Edition : 28.09.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 866 151  
  
Injection pump  
Pump designation : PES6A1000320/3RS2691  
-4  
EP type number : 9 410 230 030  
Governor  
Governor design. : RSV450...1100ADC2238  
-R  
Governor no. : 0 420 233 254

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT830

1st version kW : 151.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.10...12.20

Del. quantity cm<sup>3</sup>/ : 11.8...12.0

100 s : (11.6...12.2)

Spread cm<sup>3</sup> : 0.4

100 s : (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s : (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 118.5...120.5

1000 : (116.5...122.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:  
1st rack travel in: 11.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 500...560

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 13.20...13.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.80  
2nd pressure hPa : 385  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 560  
Rack travel in m: 12.50...12.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 133.0...137.0  
1000 s: (131.0...139.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 78.0...80.0  
1000 s: (76.0...82.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks: : C.D.C. # 3915996

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 p  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : IS0-4113

Combination no. : 0 400 866 153

Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400...950A0C2238-1R  
 Governor no. : 0 420 233 255

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 145.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 017

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 11.9...12.1

100 s : (11.7...12.3)

Spread cm<sup>3</sup> : 0.4

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 1.1...1.5

100 s : (0.9...1.8)

Spread cm<sup>3</sup> : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 900

Del. quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.20  
Speed rpm : 990...1000  
3rd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.9

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.30...5.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 200  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 310  
Rack travel in m: 11.60...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 83.5...87.5  
1000 s: (81.5...89.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

J05

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Del.quantity cm3/ : 11.5...15.5  
1000 s: (9.0...18.0)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: C.D.C. # 3917577

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 v 1  
 Edition : 20.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 157  
 Injection pump  
 Pump designation : PES6A95D12ORS2773  
 EP type number : 0 410 896 904  
 Governor  
 Governor design. : RSV350...1300AOC2237  
 -1R  
 Governor no. : 0 420 233 260

Customer-spec. information  
 Customer : CUMMINS

Engine : 6BT 5.9

1st version kW : 108.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar : 25...27

J06

Prestroke mm : 2.10...2.20  
 : (2.05...2.25)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300  
 -----  
 Rack travel in mm : 8.10...8.20  
 -----  
 Del. quantity cm<sup>3</sup>/ : 7.5...7.7  
 -----  
 100 s : (7.2...7.9)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.6)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s : (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1300  
 Del. quantity : 75.0...77.0  
 1000 : (72.5...79.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

PATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 7.10  
 Speed rpm : 1340...1350

2nd rack travel in: 4.00  
Speed rpm : 1405...1435  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1550  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 520...580

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 8.10...8.20  
2nd speed rpm : 500  
Rack travel in m: 8.50...8.60  
3rd speed rpm : 940  
Rack travel in m: 8.30...8.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 56.0...59.0  
1000 s: (54.0...61.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 7.10  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)  
Rack travel in mm : 13.00...13.20

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10

Del. quantity cm<sup>3</sup>/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 11.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 5,5 f  
Edition : 25.08.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 874 202  
  
Injection pump  
Pump designation : PES4A85D42OLS2459  
EP type number : 0 410 884 954  
Governor  
Governor design. : RSV375...1000A2B547D  
R  
Governor no. : 0 420 235 134

Customer-spec. information  
Customer : CASE

Engine : A 301 BD

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : WS 187P (CASE)

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
                  : (2,10...2,30)  
Rack travel in mm : 9,00...12,00  
Firing order : 1-3-4-2

Phasing : 0-90-180-270  
Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

2nd speed rpm : 375  
Rack travel in mm : 7,50  
Del. quantity cm<sup>3</sup>/ : 1,6...2,2  
                  100 s : (-)  
Spread cm<sup>3</sup> : 0,3  
                  100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
Click setting x : ?

## LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 7,00

## Testing:

Speed rpm : 150  
Minimum rack travel: 19,00  
Speed rpm : 375  
Rack travel in mm : 7,40...7,60  
Rack travel in mm : 4,00  
Speed rpm : 450...470  
Speed rpm : 600  
Maximum rack travel: 1,00

## TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11,30  
2nd speed rpm : 800  
Rack travel in m: 12,30...12,40  
3rd speed rpm : 400  
Rack travel in m: 13,05...13,25

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 70,9...71,9  
                  1000 s : (-)  
Spread cm<sup>3</sup> : 3,0  
                  1000 s : (-)  
Speed rpm : 600



Del. quantity cm<sup>3</sup>/ : 86,0...89,0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4,0  
1000 s: (-)  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : <88,0  
1000 s: (-)

#### BREAKAWAY

1st version  
Speed rpm : 1040...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 129,0...135,0  
1000 s: (-)  
Rack travel in mm : 16,50

#### HIGH IDLE

1st version  
Speed rpm : 1090  
Rack travel in mm : 5,70  
Del. quantity cm<sup>3</sup>/ : 12,90...18,90  
1000 s: (-)

#### LOW IDLE

Speed rpm : 375  
Rack travel in mm : 7,50  
Del. quantity cm<sup>3</sup>/ : 16,0...22,0  
1000 s: (-)  
Spread cm<sup>3</sup> : 3,0  
1000 s: (-)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a  
 Edition : 01.09.89  
 Replaces : 9.1.89  
 Test oil : ISO-4113

Combination no. : 0 400 874 238

Injection pump  
 Pump designation : PES4A95D41ORS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 L  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D904 NA

1st version kW : 70.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1000  
 -----  
 Rack travel in mm : 10.20...10.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 8.6...8.8  
 -----  
 100 s : (8.4...9.0)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.6)  
 -----

2nd speed rpm : 400.0  
 Rack travel in mm : 6.5...6.7  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s : (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del. quantity : 86.0...88.0  
 1000 : (84.0...90.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 43...51

Testing:

1st rack travel in: 9.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1085...1115  
4th rack travel in: 1230  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 15...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 6.50...6.70  
Rack travel in mm : 2.00  
Speed rpm : 515...575

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del. quantity cm3/ : 80.5...83.5  
1000 s: (78.0...86.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1040...1050

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.50...6.70  
Del. quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAS 8,3 f10  
 Edition : 07.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 078  
 Injection pump  
 Pump designation : PES6A85C420LS2264  
 Governor  
 Governor design. : RSV375...1000A2B521D  
 R

Customer-spec. information  
 Customer : CASE

Engine : A-451 BD

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : WS 187P

Inlet press., bar : 1.25

Test nozzle holder  
 assembly : 0 681 230 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000  
 -----  
 Rack travel in mm : 9,00  
 -----  
 Del. quantity cm<sup>3</sup>/ : 4,15...4,55  
 -----  
 100 s : (-)  
 -----  
 Spread cm<sup>3</sup> : 0,4  
 -----  
 100 s : (-)  
 -----  
 2nd speed rpm : 1000  
 Rack travel in mm : 12,00  
 Del. quantity cm<sup>3</sup>/ : 7,25...8,05  
 100 s : (-)  
 3rd speed rpm : 200  
 Rack travel in mm : 6,00  
 Del. quantity cm<sup>3</sup>/ : 0,95...1,75  
 100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del. quantity : 76,0...78,0  
 1000 : (-)

RATED SPEED

1st version  
 Control lever  
 position degrees: 36...44

Testing:  
 1st rack travel in: 11,60  
 Speed rpm : 1075...1105  
 2nd rack travel in: 5,20  
 Speed rpm : 1135...1165  
 4th rack travel in: 1260  
 Speed rpm : 0,30...1,00

LOW IDLE 1

Control lever  
 position degrees: 16...24  
 Setting point w/out bumper spring

Speed rpm : 375  
Rack travel in mm : 7,50

Remarks:

Testing:

Speed rpm : 150  
Minimum rack trave: 19,00  
Speed rpm : 375  
Rack travel in mm : 7,20...7,80  
Speed rpm : 600  
Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 9,00  
2nd speed rpm : 800  
Rack travel in m: 9,50...9,70  
3rd speed rpm : 500  
Rack travel in m: 9,60...9,90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650  
Del.quantity cm3/ : 82,5...86,5  
1000 s: (-)  
Speed rpm : 550  
Del.quantity cm3/ : <85,5  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00  
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 124,0...134,0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1150  
Del.quantity cm3/ : 8,5...16,5  
1000 s: (-)

LOW IDLE

Speed rpm : 375  
Del.quantity cm3/ : 15,5...19,5  
1000 s: (-)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 e 3  
 Edition : 02.10.89  
 Replaces : 20.6.87  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 275  
 Injection pump  
 Pump designation : PES6A95D410RS2471  
 EP type number : 0 410 896 952  
 Governor  
 Governor design. : RSV325...115DA8C674L  
 Governor no. : 0 420 232 331

Customer-spec. information  
 Customer : KHD

Engine : BF6L913C

1st version kW : 132.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 1.90...2.00  
 : (1.85...2.05)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150  
 -----  
 Rack travel in mm : 11.80...11.90  
 -----  
 Del. quantity cm<sup>3</sup>/ : 10.8...11.0  
 -----  
 100 s : (10.6...11.2)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.6)  
 -----  
 2nd speed rpm : 325.0  
 Rack travel in mm : 7.2...7.4  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s : (1.3...2.4)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Aneroid pressure h: 700  
 Del. quantity : 108.0...110.0  
 1000 : (106.0...112.0)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 52...60

Testing:  
 1st rack travel in: 10.80  
 Speed rpm : 1190...1200  
 2nd rack travel in: 4.00  
 Speed rpm : 1235...1265  
 3rd rack travel in: 4.00

Speed rpm : 1285...1315  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 2.00  
Speed rpm : 585...645

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 500  
Rack travel in m: 11.80...12.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.80...11.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 220  
Rack travel in m: 11.20...11.30  
3rd pressure hPa : 140  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 850  
Del. quantity cm<sup>3</sup>/ : 103.5...106.5  
1000 s: (101.0...109.0)  
Spread cm<sup>3</sup> : -  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 62.0...64.0  
1000 s: (60.0...66.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 15.50...15.90

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

The stop position of the control rod  
must be easily reached with the stop  
lever

#### APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 w 13  
 Edition : 25.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 301  
 Injection pump  
 Pump designation : PES6A90D41ORS2569  
 EP type number : 0 410 896 071  
 Governor  
 Governor design. : RSV350...1400AOC2098  
 L  
 Governor no. : 0 420 232 529

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 352

1st version kW : 96.0  
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.25...2.35  
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1380  
 Rack travel in mm : 12.40...12.50  
 Del. quantity cm<sup>3</sup>/ : 6.2...6.3  
 100 s : (6.0...6.5)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.4)

2nd speed rpm : 350.0  
 Rack travel in mm : 10.0...10.2  
 Del. quantity cm<sup>3</sup>/ : 0.9...1.5  
 100 s : (0.7...1.7)  
 Spread cm<sup>3</sup> : 0.2  
 100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1380  
 Del. quantity : 62.0...63.0  
 1000 : (60.0...65.0)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (4.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 58...66

Testing:  
 1st rack travel in: 11.40  
 Speed rpm : 1420...1430  
 2nd rack travel in: 4.00  
 Speed rpm : 1500...1530  
 4th rack travel in: 1625



Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever

position degrees: 26...34

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 8.0

#### Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 350

Rack travel in mm : 7.90...8.10

Rack travel in mm : 2.00

Speed rpm : 470...530

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1380

Rack travel in m: 12.40...12.50

2nd speed rpm : 600

Rack travel in m: 13.50...13.60

3rd speed rpm : 900

Rack travel in m: 12.90...13.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 900

Del. quantity cm<sup>3</sup>/ : 60.5...63.5

1000 s: (58.0...66.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1420...1430

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 85.0...95.0

1000 s: (82.0...98.0)

Rack travel in mm : 18.30...18.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 x 10  
 Edition : 25.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 313  
 Injection pump  
 Pump designation : PES6A90D410RS2596  
 EP type number : 0 410 896 073  
 Governor  
 Governor design. : RSV350...1400AOC1148  
 L  
 Govenner no. : 0 420 232 528

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM352A

1st version kW : 115.0  
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00x2.00x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

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Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1380  
 -----  
 Rack travel in mm : 11.30...11.40  
 -----  
 Del. quantity cm<sup>3</sup>/ : 7.1...7.2  
 -----  
 100 s: (6.9...7.4)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.4)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 7.9...8.1  
 Del. quantity cm<sup>3</sup>/ : 0.9...1.5  
 100 s: (0.7...1.7)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1380  
 Aneroid pressure h: 700  
 Del. quantity : 71.0...72.0  
 1000 : (69.0...74.0)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (4.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 62...70

Testing:  
 1st rack travel in: 10.30  
 Speed rpm : 1430...1440  
 2nd rack travel in: 4.00  
 Speed rpm : 1490...1520

3rd rack travel in: 4.00  
Speed rpm : 1510...1540  
4th rack travel in: 1620  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 7.90...8.10  
Rack travel in mm : 2.00  
Speed rpm : 530...590

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1380  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 800  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 1200  
Rack travel in m: 11.60...11.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.30...12.40

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 11.80...11.90  
2nd pressure hPa : 375  
Rack travel in m: 12.00...12.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 67.0...69.0  
1000 s: (64.5...71.5)  
Spread cm<sup>3</sup> : -  
1000 s: (5.50)  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 58.0...59.0  
1000 s: (56.0...61.0)  
Spread cm<sup>3</sup> : -  
1000 s: (5.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1430...1440

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (-)  
Rack travel in mm : 15.60...16.00

#### Remarks:

Hydraulic latching of starting  
delivery.

Latching at 0.4 bar ... 0.5 bar.

Unlatching at 0.15 bar...0.25 bar.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL 6,6 a 1  
 Edition : 08.09.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 876 321BG

Injection pump  
 Pump designation : PES6A95D320RS2684  
 EP type number : 0 410 896 917  
 Governor  
 Governor design. : RSV325...1050AOC2178  
 -2R  
 Governor no. : 0 420 233 178

Customer-spec. information  
 Customer : VALMET

Engine : MF3680

1st version kW : 133.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 11.40...11.50  
 -----  
 Del. quantity cm<sup>3</sup>/ : 10.3...10.5  
 -----  
 100 s: (10.1...10.7)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 325.0  
 Rack travel in mm : 4.6...4.8  
 Del. quantity cm<sup>3</sup>/ : 1.3...1.7  
 100 s: (1.0...1.9)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 103.0...105.0  
 1000 : (101.0...107.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 33...41

: MASSEY FERGUSON

Testing:  
1st rack travel in: 10.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
3rd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1370  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 4.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 380...440

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 500  
Rack travel in m: 11.40...11.60

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Del. quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 3  
 Edition : 02.10.89  
 Replaces : 29.3.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 327

Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AOC2195  
 R  
 Governor no. : 0 420 233 200

Customer-spec. information  
 Customer : DAF

Engine : DNT 620

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850  
 -----  
 Rack travel in mm : 11.80...11.90  
 -----  
 Del. quantity cm<sup>3</sup>/ : 7.7...7.9  
 -----  
 100 s: (7.5...8.1)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.4)  
 -----  
 2nd speed rpm : 300.0  
 Rack travel in mm : 6.5...6.7  
 Del. quantity cm<sup>3</sup>/ : 0.7...1.1  
 100 s: (0.4...1.3)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 700  
 Del. quantity : 77.0...79.0  
 1000 : (75.0...81.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (4.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 56...64

Testing:  
1st rack travel in: 9.70  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
3rd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1580  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 25...33  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Rack travel in mm : 2.00  
Speed rpm : 600...660

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 500  
Rack travel in m: 11.80...11.90  
4th speed rpm : 1060  
Rack travel in m: 11.20...11.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.30...11.50  
2nd pressure hPa : 250  
Rack travel in m: 11.70...11.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 72.0...74.0  
1000 s: (69.5...76.5)

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 65.5...66.5  
1000 s: (63.5...68.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...145.0  
1000 s: (127.0...148.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 2  
 Edition : 08.09.89  
 Replaces : 29.3.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 332

Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AOC2206  
 R  
 Governor no. : 0 420 233 204

Customer-spec. information  
 Customer : DAF

Engine : DNTD 620

1st version kW : 110.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.80...10.90

Del. quantity cm<sup>3</sup>/ : 6.5...6.7

100 s : (6.3...6.9)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del. quantity cm<sup>3</sup>/ : 0.7...1.1

100 s : (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del. quantity : 65.0...67.0

1000 : (63.0...69.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version



Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 9.20  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
3rd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 590...650

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.20...10.40  
2nd speed rpm : 500  
Rack travel in m: 10.80...10.90  
4th speed rpm : 1005  
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1290  
Del. quantity cm<sup>3</sup>/ : 69.0...71.0  
1000 s: (66.5...73.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...145.0  
1000 s: (127.0...148.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del. quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 6,0 c 5  
 Edition : 25.08.89  
 Replaces : 7.12.87  
 Test oil : ISO-4113

Combination no. : 0 400 876 337

Injection pump  
 Pump designation : PES6A90D410RS2710  
 EP type number : 0 410 896 082  
 Governor  
 Governor design. : RSV350...1400AOC1135  
 -2L  
 Governor no. : 0 420 232 473

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 96.0  
 Rated speed : 2800

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35  
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1400

Rack travel in mm : 10.80...10.90

Del. quantity cm<sup>3</sup>/ : 6.0...6.1

100 s: (5.8...6.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 8.8...9.4

Del. quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1400

Del. quantity : 60.5...61.5

1000 : (58.5...63.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

**RATED SPEED**

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 9.80

Speed rpm : 1435...1440

2nd rack travel in: 4.00

Speed rpm : 1475...1488

3rd rack travel in: 4.00

Speed rpm : 1515...1545  
4th rack travel in: 1575  
Speed rpm : 0.30...1.40  
5th rack travel in: 1440...1450  
Speed rpm : 9.80

#### LOW IDLE 1

Control lever  
position degrees: -3  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 9.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 9.00...9.20  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 500  
Rack travel in m: 12.10...12.20  
3rd speed rpm : 750  
Rack travel in m: 11.80...12.00  
4th speed rpm : 950  
Rack travel in m: 11.40...11.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 52.0...54.0  
1000 s: (49.5...56.5)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 16.90...17.30

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.80...9.40  
Del. quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (8.0...16.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (4.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 o 1
Edition : 18.08.89
Replaces : 8.6.88
Test oil : ISO-4113
Combination no. : 0 400 876 344
Injection pump
Pump designation : PES6A95D41ORS2625
EP type number : 0 410 896 926
Governor
Governor design. : RSV325...1250A2C1159
L
Governor no. : 0 420 232 490

Customer-spec. information
Customer : KHD

Engine : BF6L913C

1st version kW : 130.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

J28

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.10...11.20

Del. quantity cm3/ : 8.9...9.0

100 s: (8.7...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 900

Del. quantity : 89.0...90.0

1000 : (87.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.10

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1320...1350

3rd rack travel in: 4.00  
Speed rpm : 1370...1400  
4th rack travel in: 1540  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 570...630

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 500  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 400  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 330  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 54.0...56.0  
1000 s: (52.0...58.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

K01

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 17.10...17.30

Remarks:

#### APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 1  
 Edition : 28.09.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 350  
 Injection pump  
 Pump designation : PES6A1000410RS2754  
 EP type number : 0 410 806 002  
 Governor  
 Governor design. : RSV425...1100A2C2234  
 L  
 Governor no. : 0 420 232 498

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076TRW04

1st version kW : 122.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_ \_ \_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 10.60...10.70  
 -----  
 Del. quantity cm<sup>3</sup>/ : 10.0...10.2  
 -----  
 100 s: (9.8...10.4)  
 -----  
 Spread cm<sup>3</sup> : 0.4  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 425.0  
 Rack travel in mm : 5.0...5.2  
 Del. quantity cm<sup>3</sup>/ : 1.9...2.3  
 100 s: (1.6...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 100.5...102.5  
 1000 : (98.5...104.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

Testing:  
 1st rack travel in: 9.60  
 Speed rpm : 1145...1155  
 2nd rack travel in: 4.00

Speed rpm : 1195...1205  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 555...615

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 700  
Rack travel in m: 11.80...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 125.0...128.0  
1000 s: (122.5...130.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.00...5.20  
Del. quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

K03

: JOHN DEERE # RE29182

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 5  
 Edition : 02.10.89  
 Replaces : 29.3.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 356

Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AQC2195  
 -1R  
 Governor no. : 0 420 233 222

Customer-spec. information  
 Customer : DAF

Engine : DNT 620

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.80...11.90

Del. quantity cm<sup>3</sup>/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.7

Del. quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del. quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 56...64



Testing:  
1st rack travel in: 9.70  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
3rd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1580  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 25...33  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Rack travel in mm : 2.00  
Speed rpm : 600...660

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 500  
Rack travel in m: 11.80...11.90  
4th speed rpm : 1060  
Rack travel in m: 11.20...11.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.80...11.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.30...11.50  
2nd pressure hPa : 250  
Rack travel in m: 11.70...11.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1290  
Del.quantity cm3/ : 72.0...74.0  
1000 s: (69.5...76.5)

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 65.5...66.5  
1000 s: (63.5...68.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...145.0  
1000 s: (127.0...148.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 2  
 Edition : 28.09.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 360  
 Injection pump  
 Pump designation : PES6A100D41ORS2762  
 EP type number : 0 410 806 003  
 Governor  
 Governor design. : RSV425...1100A2G2225  
 L  
 Governor no. : 9 420 234 176

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076ARW-06

1st version kW : 146.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness : 6.00x2.00x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 11.80...11.90  
 -----  
 Del. quantity cm<sup>3</sup>/ : 11.4...11.6  
 -----  
 100 s: (11.2...11.8)  
 -----  
 Spread cm<sup>3</sup> : 0.4  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 425.0  
 Rack travel in mm : 4.9...5.1  
 Del. quantity cm<sup>3</sup>/ : 1.8...2.2  
 100 s: (1.5...2.4)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 900  
 Del. quantity : 114.0...116.0  
 1000 : (112.0...118.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 40...48

Testing:  
1st rack travel in: 10.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 570...630

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 650  
Rack travel in m: 13.70...13.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.70...13.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 535  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 720  
Rack travel in m: 13.30...13.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 147.5...150.5  
1000 s: (145.0...153.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 129.0...133.0  
1000 s: (126.0...136.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 4.90...5.10  
Del. quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE29298

Start-of-delivery mark = 13,5<sup>o</sup> after  
start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7,f  
Edition : 28.09.89  
Replaces : 20.12.88  
Test oil : ISO-4113

Combination no. : 0 400 876 363

Injection pump  
Pump designation : PES6A1000410RS2765  
EP type number : 0 410 806 005  
Governor  
Governor design. : RSV400...1100A2C2204  
-5L  
Governor no. : 0 420 232 506

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466AT-01

1st version kW : 125.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
: (2.40...2.60)

Rack travel in mm : 10.50

K08

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del. quantity cm<sup>3</sup>/ : 11.0...11.2

100 s : (10.8...11.4)

Spread cm<sup>3</sup> : 0.4

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s : (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9.90

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1220...1230

4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 700  
Rack travel in m: 11.40...11.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 114.5...117.5  
1000 s: (112.0...120.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (175.0...205.0)

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.90...6.10  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE35282

Adjustment without torque-control  
spring retainer with 0.5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 39  
 Edition : 03.11.89  
 Replaces : 24.10.88  
 Test oil : ISO-4113

Combination no. : 0 400 876 365

Injection pump  
 Pump designation : PES6A85D41ORS2761-1  
 EP type number : 0 410 886 894  
 Governor  
 Governor design. : RSV325...1150A8C2020  
 -1L  
 Governor no. : 0 420 232 515

Customer-spec. information  
 Customer : KHD

Engine : BF6L913

1st version kW : 110.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 8.3...8.4

100 s: (8.1...8.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.3...7.5

Del. quantity cm<sup>3</sup>/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del. quantity : 83.5...84.5

1000 : (81.5...86.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250

3rd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1405  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.9

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 12.90...13.00  
3rd speed rpm : 890  
Rack travel in m: 12.30...12.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.50...11.60

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 300  
Rack travel in m: 11.80...12.00  
3rd pressure hPa : 700  
Rack travel in m: 12.90...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 89.0...91.0  
1000 s: (86.5...93.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 64.5...65.5  
1000 s: (62.5...67.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 110.0...120.0  
1000 s: (107.0...123.0)  
Rack travel in mm : 17.00...17.40

Remarks:

:

#### APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 c 7  
 Edition : 07.07.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 367  
 Injection pump  
 Pump designation : PES6A90D41ORS2710-1  
 EP type number : 0 410 896 084  
 Governor  
 Governor design. : RSV350...750AOC2240L  
 Governor no. : 0 420 232 527

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 60.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35  
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 6.4...6.5

100 s: (6.2...6.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 8.2...8.4

Del. quantity cm<sup>3</sup>/ : 0.6...1.2

100 s: (0.4...1.4)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.40...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 64.0...65.0

1000 : (62.0...67.0)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 28...36

Testing:

1st rack travel in: 11.20

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 780...793

4th rack travel in: 900

Speed rpm : 0.30...1.40



LOW IDLE 1  
Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 8.3

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 8.20...8.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 9,0 i  
 Edition : 2.11.89  
 Replaces : 18.8.89  
 Test oil : ISO-4113

Combination no. : 0 400 878 006

Injection pump  
 Pump designation : PES8A75D32ORS2357  
 Governor  
 Governor design. : RSV300...1200A0B1040  
 DR

Customer-spec. information  
 Customer : IHC

Engine : DV 550-B

1st version kW : 117.7  
 Rated speed : 2400  
 2nd version kW : 122.2  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 10..00  
 Firing order : 1-8-7-3-6-5-4-2

Phasing : 0-45-90-135-180-225-

K14

Tolerance + - ° : 270-315  
 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200  
 -----  
 Rack travel in mm : 10.00  
 -----  
 Del.quantity cm<sup>3</sup>/ : 5.7...6.0  
 -----  
 100 s : (-)  
 -----  
 Spread cm<sup>3</sup> : -  
 -----  
 100 s : (-)  
 -----

2nd speed rpm : 1400  
 Rack travel in mm : 8.70...8.90  
 Del.quantity cm<sup>3</sup>/ : 3.4 \*  
 100 s : (-)  
 3rd speed rpm : 300  
 Rack travel in mm : 8.70...8.90  
 Del.quantity cm<sup>3</sup>/ : 3.4 \*  
 100 s : (-)

1st speed rpm : 1200  
 Del.quantity cm<sup>3</sup>/ : 5.7...6.0 \*\*  
 100 s : (-)  
 Spread cm<sup>3</sup> : -  
 100 s : (-)  
 2nd speed rpm : 1400  
 Rack travel in mm : 8.70...8.90  
 Del.quantity cm<sup>3</sup>/ : 0.1...1.4 \*\*  
 100 s : (-)  
 3rd speed rpm : 300  
 Rack travel in mm : 8.70...8.90  
 Del.quantity cm<sup>3</sup>/ : 0.1...1.4 \*\*  
 100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del.quantity : 56.0...58.0  
 1000 : (-)  
 2nd version  
 Speed rpm : 1200  
 Del.quantity cm<sup>3</sup>/ : 51.5...59.5  
 1000 s : (-)

RATED SPEED

1st version  
Control lever  
position degrees: 46...54

Testing:  
1st rack travel in: 7.80  
Speed rpm : 1230...1250  
2nd rack travel in: 4.80  
Speed rpm : 1425...1455

LOW IDLE 1  
Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Rack travel in mm : 3.30  
Speed rpm : 440...460  
Speed rpm : 660  
Maximum rack trave: 1.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 8.80  
2nd speed rpm : 400  
Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 900  
Del.quantity cm3/ : 56.5...59.5  
1000 s: (-)

2nd version  
Speed rpm : 900  
Del.quantity cm3/ : 58.0...61.0  
1000 s: (-)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 7.80  
Speed rpm : 1225...1235

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 111.0...134.0 \*  
1000 s: (-)

HIGH IDLE

1st version  
Speed rpm : 900  
Del.quantity cm3/ : 56.5...59.5  
1000 s: (-)

LOW IDLE

Speed rpm : 300  
Del.quantity cm3/ : 14.5...18.5 \*

Remarks:

\* = Cylinders 1,7,6 and 4  
\*\* = Cylinders 2,8,3 and 5

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 10,8 f6  
 Edition : 01.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 076 009  
 Injection pump  
 Pump designation : PE6A100D32ORS3030-1  
 EP type number : 0 411 006 019  
 Governor  
 Governor design. : RSV350..1100A8C2232R  
 Governor no. : 0 420 233 218

Customer-spec. information  
 Customer : HANOMAG

Engine : D946T-70E

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 003  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 1.80...1.90  
 : (1.75...1.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 5.50...6.50

BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 9.80...9.90  
 -----  
 Del. quantity cm<sup>3</sup>/ : 12.6...12.8  
 -----  
 100 s: (12.4...13.0)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----  
 2nd speed rpm : 350.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 700  
 Del. quantity : 126.0...128.0  
 1000 : (124.0...130.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 45...53

Testing:

1st rack travel in: 8.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
3rd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1340  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 475...535

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.80...9.90  
2nd speed rpm : 500  
Rack travel in m: 10.60...10.70  
3rd speed rpm : 915  
Rack travel in m: 10.10...10.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.60...10.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.00  
2nd pressure hPa : 450  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 290  
Rack travel in m: 9.30...9.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 89.0...91.0  
1000 s: (87.0...93.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.80  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...235.0  
1000 s: (217.0...238.0)  
Rack travel in mm : 19.50...21.00

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : BAO 31,8 d  
 Edition : 02.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 830 715  
 Injection pump  
 Pump designation : PE12P130A12ORS3127  
 EP type number : 0 411 830 704  
 Governor  
 Governor design. : RQV350...900PA934-2  
 Governor no. : 0 421 813 818

Customer-spec. information  
 Customer : BAUDOUIN

Engine : 12 P 15-2

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 074  
 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_ \_ \_ \_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27  
 Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

K18

Firing order : 1- 12- 9- 4- 5- 8-  
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 900  
 -----  
 Rack travel in mm : 12.20...12.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 30.9...31.2  
 -----  
 100 s : (30.4...31.6)  
 -----  
 Spread cm<sup>3</sup> : 0.6  
 -----  
 100 s : (1.0)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 4.8...5.0  
 Del. quantity cm<sup>3</sup>/ : 2.0...2.6  
 100 s : (1.6...3.0)  
 Spread cm<sup>3</sup> : 1.0  
 100 s : (1.4)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 325  
 travel mm : 1.10...1.30  
 2nd speed rpm : 500  
 travel mm : 3.10...3.80  
 3rd speed rpm : 750  
 travel mm : 6.00...6.40  
 4th speed rpm : 900  
 travel mm : 7.90...8.10

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 940  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 900  
 Del. quantity : 309.0...312.0  
 1000 : (304.0...316.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (10.00)

RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 11.20  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1005...1035  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 26...34

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.40  
Speed rpm : 350  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 350...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 940...950

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 19,1 o 1  
Edition : 13.10.89  
Replaces : 7.12.87  
Test oil : ISO-4113

Combination no. : 0 401 840 106

Injection pump  
Pump designation : PE12P110A320LS855  
EP type number : 0 411 810 046  
Governor  
Governor design. : RQV350...1150PA493R  
Governor no. : 0 421 813 237

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 404 A

1st version kW : 386.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
                  : (3.15...3.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
                  4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
                  180-225-240-285-300-

Phasing : 345  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 13.10...13.20

Del. quantity cm<sup>3</sup>/ : 14.0...14.2

100 s: (13.7...14.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.5...7.7

Del. quantity cm<sup>3</sup>/ : 1.8...2.4

100 s: (1.5...2.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.90...1.20

2nd speed rpm : 450  
travel mm : 3.00...3.30

3rd speed rpm : 1200  
travel mm : 8.50...9.00

4th speed rpm : 1300  
travel mm : 9.80...10.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1130

Aneroid pressure h: 700



Del. quantity : 140.0...142.0  
1000 : (137.0...145.0)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 12.10  
Speed rpm : 1185...1195  
2nd rack travel in: 4.00  
Speed rpm : 1295...1325  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.60  
Speed rpm : 350  
Rack travel in mm : 7.00...7.20

#### CONSTANT REGULATION

Speed rpm : 360...500

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.70...12.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : 395  
Rack travel in m: 13.00...13.10

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1130  
Del. quantity cm<sup>3</sup>/ : 99.0...103.0 \*  
1000 s: (96.0...106.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 121.0...123.0  
1000 s: (118.5...125.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.10  
Speed rpm : 1185...1195

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 19,2 e  
Edition : 15.08.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 840 753  
  
Injection pump  
Pump designation : PE12P120A920LS3179  
EP type number : 0 411 820 723  
Governor  
Governor design. : RQV300...1150PA819  
Governor no. : 0 421 813 560

Customer-spec. information  
Customer : KHD

Engine : BF12L513CP

1st version kW : 441.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.40...3.50  
: (3.35...3.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 4- 9- 8- 5- 2-  
: 11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-  
: 180-195-240-255-300-  
: 315  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150  
-----  
Rack travel in mm : 12.00...12.10  
-----  
Del. quantity cm<sup>3</sup>/ : 19.7...19.9  
-----  
100 s : (19.4...20.2)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s : (0.8)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 6.7...6.9  
Del. quantity cm<sup>3</sup>/ : 1.6...2.4  
100 s : (1.4...2.6)  
Spread cm<sup>3</sup> : 0.7  
100 s : (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1200  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Aneroid pressure h: 900  
Del. quantity : 197.0...199.0  
1000 : (194.0...202.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 11.00

Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1290...1320  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 16...24

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.70...6.90

#### CONSTANT REGULATION

Speed rpm : 300...470

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.00...12.10

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 450  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 200  
Rack travel in m: 10.00...10.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 97.0...101.0  
1000 s: (95.0...103.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 235.0...265.0  
1000 s: (231.0...269.0)

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD 19,2 b3  
 Edition : 02.10.89  
 Replaces : 23.6.89  
 Test oil : ISO-4113

Combination no. : 0 401 840 767

Injection pump  
 Pump designation : PE12P110A920LS3173  
 EP type number : 0 411 810 708  
 Governor  
 Governor design. : RQ300/1150PA894-1  
 Governor no. : 0 421 801 485

Customer-spec. information  
 Customer : KHD

Engine : BF12L513 C

1st version kW : 353.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 4- 9- 8- 5- 2-

K24

Phasing : 0-15-60-75-120-135-  
 180-195-240-255-300-  
 315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150  
 -----  
 Rack travel in mm : 12.40...12.50  
 -----  
 Del. quantity cm<sup>3</sup>/ : 15.6...15.8  
 -----  
 100 s : (15.3...16.1)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s : (0.8)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 6.9...7.1  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s : (1.2...2.3)  
 Spread cm<sup>3</sup> : 0.7  
 100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Aneroid pressure h: 750  
 Del. quantity : 156.0...158.0  
 1000 : (153.0...161.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (8.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:  
 1st rack travel in: 11.40  
 Speed rpm : 1195...1210  
 2nd rack travel in: 4.00

Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 390...430

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 750  
Rack travel in m: 12.80...13.00

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 750  
Rack travel mm : 12.80...13.00

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 485  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 310  
Rack travel in m: 11.30...11.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 450  
Del. quantity cm<sup>3</sup>/ : 108.0...112.0  
1000 s: (106.0...114.0)

#### BREAKAWAY

K25

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1195...1210

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...165.0  
1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : FIA 13,8 a  
 Edition : 10.02.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 0 401 846 225

Injection pump  
 Pump designation : PE6P120A72ORS167  
 EP type number : 0 411 826 053  
 Governor  
 Governor design. : RQ225/1100PA118R  
 Governor no. : 0 421 801 027

Customer-spec. information  
 Customer : FIAT

Engine : 221 A

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 17.0...17.2

100 s : (16.7...17.5)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 7.5...7.7

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1175  
 travel mm : 7.50...7.70

2nd speed rpm : 1000  
 travel mm : 5.90...6.10

3rd speed rpm : 500  
 travel mm : 5.90...6.10

4th speed rpm : 300  
 travel mm : 2.80...3.40

5th speed rpm : 225  
 travel mm : 1.40...1.90

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1100

Del. quantity : 170.0...172.0

1000 : (167.0...175.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.10  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 225  
Rack travel in mm : 7.6

Testing:

Speed rpm : 100  
Minimum rack travel: 9.10  
Speed rpm : 225  
Rack travel in mm : 7.50...7.70  
Rack travel in mm : 2.00  
Speed rpm : 365...405

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1145...1160

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 e 1  
Edition : 21.04.89  
Replaces : 21.5.87  
Test oil : ISO-4113

Combination no. : 0 401 846 329

Injection pump  
Pump designation : PE6P100A72ORS15  
EP type number : 0 411 806 106  
Governor  
Governor design. : RQ250/1100PA269R  
Governor no. : 0 421 801 050

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 355

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.4...7.6

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 118.5...120.5

1000 : (116.5...122.5)

Spread cm<sup>3</sup> : 3.00

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 12.00

Speed rpm : 1130...1140

2nd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1300



Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 7.00

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 385...425

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 450

Del. quantity cm3/ : 101.0...105.0

1000 s: (99.0...107.0)

Spread cm3 : 5.00

1000 s: (7.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1130...1140

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm3/ : 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 f 2  
Edition : 07.04.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 398  
  
Injection pump  
Pump designation : PE6P110A720RS371-1  
EP type number : 0 411 816 166  
Governor  
Governor design. : RQ300/1100PA424-1  
Governor no. : 0 421 801 395

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 355 A

1st version kW : 206.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 16.0...16.2

100 s: (15.7...16.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del. quantity : 160.0...162.0

1000 : (157.5...164.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.70

Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 100  
Minimum rack trave: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 410...450

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 650  
Rack travel in m: 11.70...11.90

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 390  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 350  
Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 156.0...160.0  
1000 s: (153.0...163.0)

Spread cm3 : 6.00  
1000 s: (9.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 135.0...137.0  
1000 s: (132.0...140.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (131.0...159.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 x  
 Edition : 08.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 414  
 Injection pump  
 Pump designation : PE6P110A32ORS389  
 EP type number : 0 411 816 134  
 Governor  
 Governor design. : RQV250...1100PA459/2  
 R  
 Governor no. : 0 421 813 230

Customer-spec. information  
 Customer : VOLVO

Engine : TD100C

1st version kW : 189.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

L04

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del. quantity cm<sup>3</sup>/ : 13.4...13.6

100 s : (13.1...13.9)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.7...4.9

Del. quantity cm<sup>3</sup>/ : 1.1...1.5

100 s : (0.8...1.7)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h : 600

Del. quantity : 134.5...136.5

1000 : (131.5...139.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.60

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1350

Speed rpm : 0.30...1.00

#### LOW IDLE 1

Control lever  
position degrees: 5...13

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 250  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 600  
Rack travel mm : 12.60...12.70

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.40...11.60  
2nd pressure hPa : 360  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 230  
Rack travel in m: 11.70...11.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 112.0...115.0  
1000 s: (109.5...117.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 180.0...220.0  
1000 s: (176.0...224.0)  
Rack travel in mm : 20.00...21.00

L05

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.70...4.90  
Del. quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 h  
 Edition : 02.10.89  
 Replaces : 29.3.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 482  
 Injection pump  
 Pump designation : PE6P120A320RS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RQV250...1100PA680  
 Governor no. : 0 421 813 374

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1 AX,BX

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080  
 -----  
 Rack travel in mm : 10.00...10.10  
 -----  
 Del. quantity cm<sup>3</sup>/ : 18.8...19.0  
 -----  
 100 s: (18.5...19.3)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 250.0  
 Rack travel in mm : 5.4...5.6  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 1.70...2.30  
 3rd speed rpm : 650  
 travel mm : 4.00...4.60  
 4th speed rpm : 1145  
 travel mm : 8.30...8.50  
 5th speed rpm : 1225  
 travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1130  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1080  
 Aneroid pressure h: 900  
 Del. quantity : 188.0...190.0  
 1000 : (185.0...193.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 45...53

#### Testing:

1st rack travel in: 9.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1320  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 250...380

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 650  
Rack travel in m: 10.50...10.70  
3rd speed rpm : 850  
Rack travel in m: 10.20...10.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.10...10.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...9.10  
2nd pressure hPa : 370  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 290  
Rack travel in m: 9.20...9.40

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 173.0...179.0  
1000 s: (170.0...182.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 128.0...130.0  
1000 s: (125.0...133.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 9.00  
Speed rpm : 1140...1150

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 5.20  
Speed rpm : 600  
Rack travel in mm : 5.40  
Speed rpm : 600

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,6 a  
 Edition : 15.08.89  
 Replaces : 7.4.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 494

Injection pump  
 Pump designation : PE6P100A720RS473  
 EP type number : 0 411 806 196  
 Governor  
 Governor design. : RQ300/1100PA269-1  
 Governor no. : 0 421 801 237

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 355

1st version kW : 177.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow quantity min. 1/h: 100...120

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 12.50...12.60  
 -----  
 Del. quantity cm<sup>3</sup>/ : 12.0...12.2  
 -----  
 100 s: (11.8...12.4)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 8.1...8.3  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.5)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 13.40...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 120.0...122.0  
 1000 : (118.0...124.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 13.6

Testing:  
 1st rack travel in: 11.50  
 Speed rpm : 1140...1150



2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:

Speed rpm : 200  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.30  
Rack travel in mm : 2.00  
Speed rpm : 350...390

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 110.0...114.0  
1000 s: (107.5...116.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : RVI 9,8 b 4  
 Edition : 15.08.89  
 Replaces : 11.3.88  
 Test oil : ISO-4113

Combination no. : 0 401 846 497

Injection pump  
 Pump designation : PE6P120A32ORS438-1  
 EP type number : 0 411 826 133  
 Governor  
 Governor design. : RQV275...1200PA64B-2  
 Governor no. : 0 421 813 490

Customer-spec. information

Customer : RVI

Engine : MIDS062030

1st version kW : 150.0  
 Rated speed : 2400

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1200  
 -----  
 Rack travel in mm : 10.20...10.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 13.3...13.5  
 -----  
 100 s: (13.0...13.8)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 275.0  
 Rack travel in mm : 6.4...6.6  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s: (1.2...2.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 275  
 travel mm : 1.20...1.40  
 2nd speed rpm : 450  
 travel mm : 3.30...4.00  
 3rd speed rpm : 850  
 travel mm : 5.90...6.20  
 4th speed rpm : 1200  
 travel mm : 8.20...8.40

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1200  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1200  
 Del. quantity : 133.0...135.0  
 1000 : (130.0...138.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 9.20  
Speed rpm : 1265...1275  
2nd rack travel in: 3.90  
Speed rpm : 1375...1405  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.90  
Speed rpm : 275  
Rack travel in mm : 6.40...6.60

#### CONSTANT REGULATION

Speed rpm : 275...360

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 116.0...122.0  
1000 s: (113.0...125.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: -1.00

Speed rpm : 1265...1275

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 105.0...125.0  
1000 s: (101.0...129.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : -3.60...-3.80  
Del. quantity cm<sup>3</sup>/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Start-of-delivery mark at the "INJ"  
marking

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 l  
 Edition : 15.08.89  
 Replaces : 30.9.88  
 Test oil : ISO-4113

Combination no. : 0 401 846 499

Injection pump  
 Pump designation : PE6P120A32ORS474  
 EP type number : 0 411 826 134  
 Governor  
 Governor design. : RQV275...1200PA425-3  
 Governor no. : 0 421 813 441

Customer-spec. information

Customer : RVI

Engine : MIDS062030

1st version kW : 168.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.90...12.00

Del. quantity cm<sup>3</sup>/ : 15.1...15.3  
 100 s : (14.8...15.6)

Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 275.0  
 Rack travel in mm : 6.3...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s : (1.2...2.4)

Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
 travel mm : 1.20...1.40  
 2nd speed rpm : 400  
 travel mm : 2.90...3.40  
 3rd speed rpm : 900  
 travel mm : 5.80...6.00  
 4th speed rpm : 1200  
 travel mm : 7.80...8.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1250  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 700  
 Del. quantity : 151.0...153.0  
 1000 : (148.0...156.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 10.90  
Speed rpm : 1275...1285  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 200  
Minimum rack travel: 9.70  
Speed rpm : 275  
Rack travel in mm : 6.30...6.50

#### CONSTANT REGULATION

Speed rpm : 275...360

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.80  
2nd pressure hPa : 195  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 175  
Rack travel in m: 11.10...12.30

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 139.0...145.0  
1000 s: (136.0...148.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 92.0...94.0  
1000 s: (89.0...97.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: -1.00  
Speed rpm : 1275...1285

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 105.0...125.0  
1000 s: (101.0...129.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : -5.40...-5.60  
Del.quantity cm<sup>3</sup>/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Start-of-delivery mark at the "INJ"  
marking

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : VOL 10,0 s  
 Edition : 15.08.89  
 Replaces : 19.2.88  
 Test oil : ISO-4113

Combination no. : 0 401 846 529

Injection pump  
 Pump designation : PE6P120A32ORS3186  
 EP type number : 0 411 826 756  
 Governor  
 Governor design. : RQV250..102SPA657-13  
 Governor no. : 0 421 813 592

Customer-spec. information  
 Customer : VOLVO

Engine : TD102F

1st version kW : 220.0  
 Rated speed : 2050

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.2...4.4

Del. quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 250  
 travel mm : 1.20...1.30

2nd speed rpm : 430  
 travel mm : 3.50...3.80

3rd speed rpm : 700  
 travel mm : 6.40...6.60

4th speed rpm : 900  
 travel mm : 6.40...6.60

5th speed rpm : 1080  
 travel mm : 8.30...8.50

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del. quantity : 197.0...199.0  
1000 : (194.0...202.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 10.40  
Speed rpm : 1055...1065  
2nd rack travel in: 4.00  
Speed rpm : 1110...1140  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 4...12

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 250  
Rack travel in mm : 4.20...4.40

#### CONSTANT REGULATION

Speed rpm : 250...350

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.40...11.50

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 80  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 400  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 143.0...145.0  
1000 s: (140.0...148.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1055...1065

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.20...4.40  
Del. quantity cm<sup>3</sup>/ : 17.0...22.0  
1000 s: (14.5...24.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 x1  
 Edition : 08.09.89  
 Replaces : 10.8.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 530

Injection pump  
 Pump designation : PE6P110A32ORS407-1  
 EP type number : 0 411 816 147  
 Governor  
 Governor design. : RQ275/1000PA818  
 Governor no. : 0 421 801 360

Customer-spec. information  
 Customer : DAF

Engine : LT 160

1st version kW : 160.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 13.4...13.6

100 s: (13.1...13.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.3...7.5

Del. quantity cm<sup>3</sup>/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Del. quantity : 134.0...136.0

1000 : (131.5...138.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.00

Speed rpm : 1030...1045

2nd rack travel in: 4.00

Speed rpm : 1090...1120

4th rack travel in: 1300

Speed rpm : 0.00...1.00



LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 7.4

Testing:

Speed rpm : 100  
Minimum rack trave: 8.60  
Speed rpm : 275  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 350...390

TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 550  
Rack travel in m: 12.30...12.50  
3rd speed rpm : 745  
Rack travel in m: 11.90...12.10  
4th speed rpm : 880  
Rack travel in m: 11.20...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 980  
Del.quantity cm3/ : 112.0...116.0  
1000 s: (109.0...119.0)

BREAKAWAY

1st version

imm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1030...1045

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...265.0  
1000 s: (221.0...269.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 7.30...7.50  
Del.quantity cm3/ : 14.0...19.0  
1000 s: (11.5...21.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 b  
 Edition : 20.10.89  
 Replaces : 7.2.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 546

Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RQV250...1050PA807-1  
 Governor no. : 0 421 813 665

Customer-spec. information  
 Customer : ENASA

Engine : 95 A1 BX

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 11.4...11.6  
 100 s : (11.2...11.8)

Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.8...2.2  
 100 s : (1.5...2.4)

Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 1.90...2.50

3rd speed rpm : 700  
 travel mm : 4.50...5.10

4th speed rpm : 1095  
 travel mm : 8.00...8.20

5th speed rpm : 1185  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del. quantity : 114.0...116.0  
 1000 : (112.0...118.0)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 43...51

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 250...400

#### START CUT-OUT

Speed 1/min : 170 (190)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 c  
 Edition : 20.10.89  
 Replaces : 30.5.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 547

Injection pump  
 Pump designation : PE6P110A82QLS513  
 EP type number : 0 411 816 174  
 Governor  
 Governor design. : RQV250...1000PA811  
 Governor no. : 0 421 813 556

Customer-spec. information  
 Customer : ENASA

Engine : 95 R1 AX

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 17.6...17.8  
 100 s: (17.3...18.1)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del. quantity cm<sup>3</sup>/ : 1.8...2.3  
 100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 400  
 travel mm : 2.20...2.80

3rd speed rpm : 650  
 travel mm : 4.50...5.10

4th speed rpm : 1050  
 travel mm : 8.50...8.70

5th speed rpm : 1140  
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del. quantity : 176.0...178.0  
 1000 : (173.0...181.0)

Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
Control lever  
position degrees: 56...64

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION  
Speed rpm : 250...480

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50  
3rd speed rpm : 850  
Rack travel in m: 13.00...13.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.00...13.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...11.20  
2nd pressure hPa : 440  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 290  
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 170 (190)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 178.0...182.0  
1000 s: (175.0...185.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1040...1050

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

## APPLICATION

Special-purpose vehicle

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : ENA 10,1 d  
 Edition : 20.10.89  
 Replaces : 7.2.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 549

Injection pump  
 Pump designation : PE6P100A820LS503  
 EP type number : 0 411 806 197  
 Governor  
 Governor design. : RQV250...1000PA811  
 Govenner no. : 0 421 813 556

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 AX,BX

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del. quantity cm<sup>3</sup>/ : 16.5...16.7  
 100 s: (16.3...16.9)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 250.0  
 Rack travel in mm : 7.7...7.9  
 Del. quantity cm<sup>3</sup>/ : 1.8...2.2  
 100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 400  
 travel mm : 2.20...2.80

3rd speed rpm : 650  
 travel mm : 4.50...5.10

4th speed rpm : 1050  
 travel mm : 8.50...8.70

5th speed rpm : 1140  
 travel mm : 9.70...10.10

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del. quantity : 165.0...167.0  
 1000 : (163.0...169.0)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 56...64

Testing:  
1st rack travel in: 13.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 250...450

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 550  
Rack travel in m: 15.00...15.30  
3rd speed rpm : 750  
Rack travel in m: 14.80...15.00  
4th speed rpm : 850  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.70...14.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.90...13.30  
2nd pressure hPa : 400  
Rack travel in m: 14.10...14.20  
3rd pressure hPa : 300  
Rack travel in m: 13.40...13.60

START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 170.0...174.0  
1000 s: (168.0...176.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : ENA 11,9 a  
 Edition : 20.10.89  
 Replaces : 9.10.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 550

Injection pump  
 Pump designation : PE6P120A320RS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RQV250...1050PA808  
 Governor no. : 0 421 813 553

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1 CX

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1030  
 -----  
 Rack travel in mm : 10.90...11.00  
 -----  
 Del. quantity cm<sup>3</sup>/ : 20.9...21.1  
 -----  
 100 s: (20.6...21.4)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 250.0  
 Rack travel in mm : 5.6...5.8  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 1.90...2.50

3rd speed rpm : 700  
 travel mm : 4.50...5.10

4th speed rpm : 1095  
 travel mm : 8.00...8.20

5th speed rpm : 1185  
 travel mm : 9.00...9.40

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1030  
 Aneroid pressure h: 900  
 Del. quantity : 209.0...211.0  
 1000 : (206.0...214.0)



Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 250...430

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.90...11.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 510  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 300  
Rack travel in m: 9.20...9.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 187.0...193.0  
1000 s: (184.0...196.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 e  
Edition : 02.10.89  
Replaces : 7.2.89  
Test oil : ISO-4113

Combination no. : 0 401 846 552

Injection pump  
Pump designation : PE6P100A820LS503-1  
EP type number : 0 411 806 198  
Governor  
Governor design. : RQ250/1000PA352-1  
Governor no. : 0 421 801 412

Customer-spec. information  
Customer : ENASA

Engine : 95 TEDY

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
                  : (2.85...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 16.2...16.4  
100 s : (16.0...16.6)

Spread cm<sup>3</sup> : 0.3  
100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.8...8.0

Del. quantity cm<sup>3</sup>/ : 1.8...2.2  
100 s : (1.5...2.4)

Spread cm<sup>3</sup> : 0.3  
100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 600

Rack travel in mm : 16.00...17.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del. quantity : 162.0...164.0  
1000 : (160.0...166.0)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 16.5

Testing:

1st rack travel in: 13.00  
Speed rpm : 1045...1060

2nd rack travel in: 4.00  
Speed rpm : 1100...1130

4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 700  
Rack travel in m: 14.80...15.30  
3rd speed rpm : 825  
Rack travel in m: 14.20...14.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.70...14.90

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 12.90...13.30  
2nd pressure hPa : 400  
Rack travel in m: 14.10...14.20  
3rd pressure hPa : 300  
Rack travel in m: 13.40...13.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 170.0...174.0  
1000 s: (168.0...176.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

#### 1st version

L27

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 e1  
 Edition : 02.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 552A  
 Injection pump  
 Pump designation : PE6P100A820LS503-1  
 EP type number : 0 411 806 198  
 Governor  
 Governor design. : R0250/1000PA352-1  
 Governor no. : 0 421 801 412

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 AZ

1st version kW : 165.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values ---

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.85...2.95)  
 Rack travel in mm : 9.00...12.00

L28

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance  $\sigma$  -  $\sigma$  : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980  
 -----  
 Rack travel in mm : 14.20...14.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 16.5...16.7  
 -----  
 100 s: (16.3...16.9)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 250.0  
 Rack travel in mm : 7.8...8.0  
 Del. quantity cm<sup>3</sup>/ : 1.8...2.2  
 100 s: (1.5...2.4)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 16.00...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 980  
 Aneroid pressure h: 900  
 Del. quantity : 165.0...167.0  
 1000 : (163.0...169.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 16.5

Testing:  
 1st rack travel in: 13.20  
 Speed rpm : 1045...1060  
 2nd rack travel in: 4.00  
 Speed rpm : 1100...1130

4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 700  
Rack travel in m: 15.00...15.50  
3rd speed rpm : 825  
Rack travel in m: 14.40...14.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.70...14.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.90...13.30  
2nd pressure hPa : 400  
Rack travel in m: 14.10...14.20  
3rd pressure hPa : 300  
Rack travel in m: 13.40...13.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 170.0...174.0  
1000 s: (168.0...176.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 250.0...265.0  
1000 s: (246.0...269.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : STE 9,7 f 1  
Edition : 24.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 554  
Injection pump  
Pump designation : PE6P110A720RS516  
EP type number : 0 411 816 176  
Governor  
Governor design. : RQ300/1100PA412-2  
Governor no. : 0 421 801 435

Customer-spec. information  
Customer : STEYR

Engine : WD615.64

1st version kW : 175.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

MO2

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.40...14.50

Del. quantity cm<sup>3</sup>/ : 14.2...14.4

100 s: (13.9...14.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.9...2.4

100 s: (1.6...2.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 142.0...144.0

1000 : (139.0...147.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1245...1275

4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### TORQUE CONTROL

Dimension a mm : 0.25  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.40...14.50  
2nd speed rpm : 700  
Rack travel in m: 15.60...15.80  
3rd speed rpm : 1000  
Rack travel in m: 14.60...14.80  
4th speed rpm : 860  
Rack travel in m: 15.20...15.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 15.60...15.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.90...13.10  
2nd pressure hPa : 575  
Rack travel in m: 15.00...15.10  
3rd pressure hPa : 310  
Rack travel in m: 13.60...13.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 160.0...164.0  
1000 s: (157.0...167.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 116.0...118.0  
1000 s: (113.0...121.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...195.0  
1000 s: (171.0...199.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 19.0...24.0  
1000 s: (16.5...26.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 a3  
 Edition : 13.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 563  
 Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RQV250...1050PA808-3  
 Governor no. : 0 421 813 812

Customer-spec. information  
 Customer : ENASA

Engine : 96 T3 CX

1st version kW : 228.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 10.40...10.50

Del. quantity cm<sup>3</sup>/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 1.70...2.30

3rd speed rpm : 700  
 travel mm : 4.50...5.10

4th speed rpm : 1095  
 travel mm : 8.20...8.40

5th speed rpm : 1175  
 travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure n: 900



Del. quantity : 179.0...181.0  
1000 : (176.0...184.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.40...10.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 430  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 260  
Rack travel in m: 9.00...9.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1030  
Del. quantity cm<sup>3</sup>/ : 191.0...197.0  
1000 s: (188.0...200.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 12,9 b  
 Edition : 10.02.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 846 726

Injection pump  
 Pump designation : PE6P120A720LS3806  
 EP type number : 0 411 826 711  
 Governor  
 Governor design. : RQ300/1200PA356  
 Governor no. : 0 421 801 070

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8260.02.405

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 443 022

Opening pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter x Wall thickness x Length mm : 8.00X2.00X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200  
 -----  
 Rack travel in mm : 9.30...9.40  
 -----  
 Del. quantity cm<sup>3</sup>/ : 17.6...18.0  
 -----  
 100 s : (17.3...18.3)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s : (0.9)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm<sup>3</sup>/ : 3.0...3.8  
 100 s : (2.7...4.1)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 650  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del. quantity : 176.0...180.0  
 1000 : (173.0...183.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 650  
 Rack travel in mm : 15.8

Testing:  
 1st rack travel in: 8.30  
 Speed rpm : 1245...1260  
 2nd rack travel in: 4.00  
 Speed rpm : 1285...1315  
 4th rack travel in: 1400  
 Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack travel: 8.60  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 9.30...9.40  
2nd speed rpm : 650  
Rack travel in m: 9.30...9.50

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.30  
Speed rpm : 1245...1260

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 o  
 Edition : 02.05.89  
 Replaces : 9.10.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 745

Injection pump  
 Pump designation : PE6P110A32ORS3080  
 EP type number : 0 411 816 722  
 Governor  
 Governor design. : RQV250...1100PA589  
 Governor no. : 0 421 813 307

## Customer-spec. information

Customer : VOLVO

Engine : TD 100 G

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...174

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x-600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 16.7...16.9

100 s : (16.4...17.2)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.9...4.1

Del. quantity cm<sup>3</sup>/ : 1.5...1.9

100 s : (1.2...2.1)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.20...1.30

2nd speed rpm : 370  
 travel mm : 2.60...3.00

3rd speed rpm : 430  
 travel mm : 3.50...3.90

4th speed rpm : 1160  
 travel mm : 8.10...8.30

5th speed rpm : 1210  
 travel mm : 9.40...9.60

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h : 900

Del. quantity : 167.0...169.0

1000 : (164.0...172.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 4...12

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.30  
Speed rpm : 250  
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION  
Speed rpm : 270...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 610  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 280  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 121.0...124.0  
1000 s: (118.0...127.0)

#### BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...196.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.90...4.10  
Del. quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : SCA 11,0 y  
 Edition : 21.05.87  
 Replaces : 9.3.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 764

Injection pump  
 Pump designation : PE6P110A72ORS3115  
 EP type number : 0 411 816 735  
 Governor  
 Governor design. : RQV200...1100PA468  
 Governor no. : 0 421 813 364

Customer-spec. information  
 Customer : SAAB-SCANIA

Engine : DN11 01

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
 : (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 12.40...12.50

Del. quantity cm<sup>3</sup>/ : 11.9...12.1  
 100 s : (11.7...12.3)

Spread cm<sup>3</sup> : 0.5  
 100 s : (0.7)

2nd speed rpm : 225.0  
 Rack travel in mm : 5.4...5.6  
 Del. quantity cm<sup>3</sup>/ : 2.0...2.4  
 100 s : (-)

Spread cm<sup>3</sup> : 0.2  
 100 s : (0.4)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 225  
 travel mm : 0.90...1.00

2nd speed rpm : 360  
 travel mm : 2.60...2.90

3rd speed rpm : 560  
 travel mm : 4.30...4.60

4th speed rpm : 1150  
 travel mm : 8.40...8.60

5th speed rpm : 1250  
 travel mm : 9.50...9.80

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 600  
 Del. quantity : 119.0...121.0  
 1000 : (117.0...123.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (7.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 57...65

Testing:

1st rack travel in: 11.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 6...14

Testing:

Speed rpm : 100  
Minimum rack travel: 6.90  
Speed rpm : 225  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 330...390

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 119.5...124.5  
1000 s: (118.0...126.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...290.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225  
Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 20.0...24.0  
Spread cm<sup>3</sup> : 2.00  
1000 s: (4.00)

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on April 10, 1984

Start of delivery - engine: 21<sup>o</sup> before  
TDC

Firing sequence of engine:  
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,0 f4  
 Edition : 08.09.89  
 Replaces : 3.85  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 766  
 Injection pump  
 Pump designation : PE6P120A320RS3071Z  
 EP type number : 0 411 826 723  
 Governor  
 Governor design. : RQV250...102SPA371  
 Govenner no. : 0 421 813 303

Customer-spec. information  
 Customer : VOLVO

Engine : TD120G/USA

1st version kW : 243.0  
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 450  
 travel mm : 2.50...3.10

3rd speed rpm : 700  
 travel mm : 4.40...5.00

4th speed rpm : 1090  
 travel mm : 7.80...8.00

5th speed rpm : 1190  
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900



Del. quantity : 214.5...216.5  
1000 : (211.5...219.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 41...19

#### Testing:

1st rack travel in: 11.00  
Speed rpm : 1085...1095  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.10  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70

#### CONSTANT REGULATION

Speed rpm : 250...450

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.00...12.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 530  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 330  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 179.0...181.0  
1000 s: (176.0...184.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1085...1095

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...280.0  
1000 s: (236.0...284.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.50...5.70  
Del. quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.0...22.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,0 f3  
 Edition : 08.09.89  
 Replaces : 1.83  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 767  
 Injection pump  
 Pump designation : PE6P12DA32ORS3071Y  
 EP type number : 0 411 826 724  
 Governor  
 Governor design. : RQV250...1025PA371  
 Governor no. : 0 421 813 303

Customer-spec. information  
 Customer : VOLVO

Engine : TD120G/USA

1st version kW : 213.0  
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 19.3...19.5

100 s: (19.0...19.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 450  
 travel mm : 2.50...3.10

3rd speed rpm : 700  
 travel mm : 4.40...5.00

4th speed rpm : 1090  
 travel mm : 7.80...8.00

5th speed rpm : 1190  
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 193.0...195.0  
1000 : (190.0...198.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 41...49

#### Testing:

1st rack travel in: 10.30  
Speed rpm : 1085...1095  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.10  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70

#### CONSTANT REGULATION

Speed rpm : 250...450

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.30...11.40

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 335  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 200  
Rack travel in m: 10.20...10.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 166.0...168.0  
1000 s: (163.0...178.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1085...1095

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...280.0  
1000 s: (236.0...284.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.50...5.70  
Del. quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.0...22.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 o3  
 Edition : 09.10.87  
 Replaces : 12.6.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 768

Injection pump  
 Pump designation : PE6P110A32ORS3080-1  
 EP type number : 0 411 816 734  
 Governor  
 Governor design. : RQV250...1025PA589  
 Governor no. : 0 421 813 332

Customer-spec. information  
 Customer : VOLVO

Engine : TD 101 F

1st version kW : 220.0  
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 17.9...18.2

100 s : (17.7...18.5)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.3...4.5

Del. quantity cm<sup>3</sup>/ : 1.5...1.9

100 s : (1.2...2.1)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.20...1.30

2nd speed rpm : 350  
 travel mm : 2.20...2.80

3rd speed rpm : 430  
 travel mm : 3.50...3.90

4th speed rpm : 1080  
 travel mm : 8.40...8.50

5th speed rpm : 1150  
 travel mm : 9.50...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h : 900

Del. quantity : 179.5...182.5

1000 : (177.0...185.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1085...1095  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 5...13

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.80  
Speed rpm : 250  
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION  
Speed rpm : 270...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 670  
Rack travel in m: 13.00...13.10  
3rd pressure hPa : 310  
Rack travel in m: 11.00...11.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 171.0...177.0  
1000 s: (169.0...179.0)  
Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 132.0...135.0  
1000 s: (129.5...137.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1085...1095

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...200.0  
1000 s: (146.0...204.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.30...4.50  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,0 i  
 Edition : 07.03.88  
 Replaces : 24.7.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 773

Injection pump  
 Pump designation : PE6P120A32ORS3116  
 EP type number : 0 411 826 727  
 Governor  
 Governor design. : RQV250...102SPA657  
 Governor no. : 0 421 813 368

Customer-spec. information  
 Customer : VOLVO

Engine : TD 120 G

1st version kW : 242.7  
 Rated speed : 2050

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 900

travel mm : 6.30...6.70

5th speed rpm : 1025

travel mm : 7.30...7.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 700

Del. quantity : 196.5...198.5  
1000 : (193.5...201.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

#### Testing:

1st rack travel in: 10.40  
Speed rpm : 1085...1095  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 6...14

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.40...11.50

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.10  
2nd pressure hPa : 450  
Rack travel in m: 11.20...11.30  
3rd pressure hPa : 170  
Rack travel in m: 9.30...9.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 151.0...153.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1085...1095

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...270.0  
1000 s: (236.0...274.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.50...5.70  
Del. quantity cm<sup>3</sup>/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 q6  
 Edition : 02.10.89  
 Replaces : 11.12.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 784

Injection pump  
 Pump designation : PE6P110A32ORS3108V  
 EP type number : 0 411 816 737  
 Governor  
 Governor design. : RQV250...1100PA649  
 Governor no. : 0 421 813 346

Customer-spec. information  
 Customer : VOLVO

Engine : B10/THD101FD

1st version kW : 210.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.70...13.80

Del. quantity cm<sup>3</sup>/ : 18.0...18.2

100 s: (17.7...18.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.30

2nd speed rpm : 500  
 travel mm : 4.10...4.90

3rd speed rpm : 700  
 travel mm : 6.30...6.70

4th speed rpm : 950  
 travel mm : 6.30...6.70

5th speed rpm : 1100  
 travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 180.0...182.0

1000 : (177.0...185.0)



Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 12.70  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 250  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 345...405

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.70...13.80

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.90  
2nd pressure hPa : 300  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 870  
Rack travel in m: 12.90...13.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm3/ : 106.0...108.0  
1000 s: (103.0...111.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 160.0...190.0  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.30...5.50  
Del. quantity cm3/ : 30.0...34.0  
1000 s: (27.5...36.5)  
Spread cm3 : 3.00  
1000 s: (6.00)

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,0 k4  
 Edition : 08.09.89  
 Replaces : 5.85  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 788  
 Injection pump  
 Pump designation : PE6P120A32ORS3118-1  
 EP type number : 0 411 826 739  
 Governor  
 Governor design. : RQV250...900PA657-3  
 Governor no. : 0 421 813 426

Customer-spec. information  
 Customer : VOLVO

Engine : TD121FA

1st version kW : 206.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 -----  
 Rack travel in mm : 10.30...10.40  
 -----  
 Del. quantity cm<sup>3</sup>/ : 17.0...17.2  
 -----  
 100 s: (16.7...17.5)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 250.0  
 Rack travel in mm : 3.3...3.5  
 Del. quantity cm<sup>3</sup>/ : 1.8...2.3  
 100 s: (1.5...2.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 3.60...4.20  
 3rd speed rpm : 750  
 travel mm : 6.30...6.70  
 4th speed rpm : 960  
 travel mm : 7.80...8.00  
 5th speed rpm : 1020  
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 980  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure n: 700

Del. quantity : 170.5...172.5  
1000 : (167.5...175.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

#### Testing:

1st rack travel in: 9.30  
Speed rpm : 960...970  
2nd rack travel in: 4.00  
Speed rpm : 1000...1030  
4th rack travel in: 1100  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 4...12

#### Testing:

Speed rpm : 100  
Minimum rack travel: 4.80  
Speed rpm : 250  
Rack travel in mm : 3.30...3.50

#### CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.30...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 305  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 195  
Rack travel in m: 9.30...9.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (145.0...155.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 960...970

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...280.0  
1000 s: (236.0...284.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.30...3.50  
Del. quantity cm<sup>3</sup>/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,0 k5  
 Edition : 08.09.89  
 Replaces : 5.85  
 Test oil : ISO-4113

Combination no. : 0 401 846 789

Injection pump  
 Pump designation : PE6P120A32ORS3118-1  
 EP type number : 0 411 826 739  
 Governor  
 Governor design. : RQV250...1100PA657-4  
 Govenner no. : 0 421 813 427

Customer-spec. information  
 Customer : VOLVO

Engine : TD121FB

1st version kW : 210.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 -----  
 Rack travel in mm : 10.30...10.40  
 -----  
 Del. quantity cm<sup>3</sup>/ : 17.0...17.2  
 -----  
 100 s : (16.7...17.5)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s : (0.9)  
 -----

2nd speed rpm : 250.0  
 Rack travel in mm : 3.3...3.5  
 Del. quantity cm<sup>3</sup>/ : 1.8...2.3  
 100 s : (1.5...2.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 3.70...4.30  
 3rd speed rpm : 750  
 travel mm : 6.30...6.70  
 4th speed rpm : 1130  
 travel mm : 7.60...7.80  
 5th speed rpm : 1180  
 travel mm : 8.40...8.80

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1160  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 700

Del. quantity : 170.5...172.5  
1000 : (167.5...175.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

#### Testing:

1st rack travel in: 9.30  
Speed rpm : 1120...1130  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 3...11

#### Testing:

Speed rpm : 100  
Minimum rack travel: 4.80  
Speed rpm : 250  
Rack travel in mm : 3.30...3.50

#### CONSTANT REGULATION

Speed rpm : 250...370

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.30...10.40

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 270  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 170  
Rack travel in m: 9.30...9.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 151.0...153.0  
1000 s: (147.0...157.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1120...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...280.0  
1000 s: (236.0...284.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.30...3.50  
Del. quantity cm<sup>3</sup>/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,0 k3  
 Edition : 08.09.89  
 Replaces : 5.85  
 Test oil : ISO-4113

Combination no. : 0 401 846 796

Injection pump  
 Pump designation : PE6P120A32ORS3118-2  
 EP type number : 0 411 826 740  
 Governor  
 Governor design. : RQV250...900PA657-5  
 Governor no. : 0 421 813 451

Customer-spec. information  
 Customer : VOLVO

Engine : TD121FC

1st version kW : 232.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 19.1...19.3

100 s: (18.8...19.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.3...3.5

Del. quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 450  
 travel mm : 3.60...4.20

3rd speed rpm : 750  
 travel mm : 6.30...6.70

4th speed rpm : 960  
 travel mm : 7.80...8.00

5th speed rpm : 1020  
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 980  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 700

Del. quantity : 191.5...193.5  
1000 : (188.5...196.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 10.20  
Speed rpm : 920...930  
2nd rack travel in: 4.00  
Speed rpm : 990...1020  
4th rack travel in: 1100  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 3...11

#### Testing:

Speed rpm : 100  
Minimum rack travel: 4.80  
Speed rpm : 250  
Rack travel in mm : 3.30...3.50

#### CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.20...11.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 385  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 140  
Rack travel in m: 9.30...9.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 151.0...153.0  
1000 s: (147.0...157.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 920...930

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...280.0  
1000 s: (236.0...284.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.30...3.50  
Del. quantity cm<sup>3</sup>/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,0 k6  
 Edition : 02.10.89  
 Replaces : 5.85  
 Test oil : ISO-4113

Combination no. : 0 401 846 797

Injection pump  
 Pump designation : PE6P120A32ORS3118-3  
 EP type number : 0 411 826 741  
 Governor  
 Governor design. : RQV250...102SPA657-6  
 Govenner no. : 0 421 813 452

Customer-spec. information  
 Customer : VOLVO

Engine : TD121FE

1st version kW : 257.0  
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 20.7...20.9

100 s: (20.4...21.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.3...3.5

Del. quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 450  
 travel mm : 3.60...4.20

3rd speed rpm : 750  
 travel mm : 6.30...6.70

4th speed rpm : 1050  
 travel mm : 7.80...8.00

5th speed rpm : 1120  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900



Del. quantity : 207.5...209.5  
1000 : (204.5...212.5)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 11.00  
Speed rpm : 1045...1055  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 4...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 4.90  
Speed rpm : 250  
Rack travel in mm : 3.30...3.50

#### CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.00...12.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 520  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 200  
Rack travel in m: 9.70...9.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm3/ : 151.0...153.0  
1000 s: (147.0...157.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1045...1055

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 240.0...280.0  
1000 s: (236.0...284.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.30...3.50  
Del. quantity cm3/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,0 k7  
 Edition : 08.09.89  
 Replaces : 5.85  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 798  
 Injection pump  
 Pump designation : PE6P120A32ORS3118-4  
 EP type number : 0 411 826 742  
 Governor  
 Governor design. : RQV250...900PA657-7  
 Governor no. : 0 421 813 453

Customer-spec. information

Customer : VOLVO  
 Engine : TD121FF

1st version kW : 272.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 -----  
 Rack travel in mm : 12.20...12.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 21.1...21.3  
 -----  
 100 s: (20.8...21.6)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 250.0  
 Rack travel in mm : 3.3...3.5  
 Del. quantity cm<sup>3</sup>/ : 1.8...2.3  
 100 s: (1.5...2.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 3.60...4.20  
 3rd speed rpm : 750  
 travel mm : 6.30...6.70  
 4th speed rpm : 960  
 travel mm : 7.80...8.00  
 5th speed rpm : 1020  
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 980  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure n: 900

Del. quantity : 211.5...213.5  
1000 : (208.5...216.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 11.20  
Speed rpm : 920...930  
2nd rack travel in: 4.00  
Speed rpm : 1000...1030  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 3...11

#### Testing:

Speed rpm : 100  
Minimum rack travel: 4.90  
Speed rpm : 250  
Rack travel in mm : 3.30...3.50

#### CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.20...12.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 550  
Rack travel in m: 11.90...12.00  
3rd pressure hPa : 140  
Rack travel in m: 9.30...9.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 151.0...153.0  
1000 s: (147.0...157.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 920...930

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...280.0  
1000 s: (236.0...284.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.30...3.50  
Del. quantity cm<sup>3</sup>/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 a1  
 Edition : 02.10.89  
 Replaces : 22.12.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 826  
 Injection pump  
 Pump designation : PE6P120A32ORS3178  
 EP type number : 0 411 826 752  
 Governor  
 Governor design. : RQV250...102SPA657-1  
 Governor no. : 0 421 813 567

Customer-spec. information  
 Customer : VOLVO

Engine : TD122FS

1st version kW : 287.0  
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 25.2...25.4

100 s : (24.9...25.7)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.1

Del. quantity cm<sup>3</sup>/ : 1.8...2.3

100 s : (1.5...2.5)

Spread cm<sup>3</sup> : 0.5

100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 252.0...254.0

1000 : (249.0...257.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 13.00

Speed rpm : 1055...1065

2nd rack travel in: 4.00

Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 6...14

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 250  
Rack travel in mm : 4.80...5.10

#### CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 14.00...14.10

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in mm: 10.00...10.20  
2nd pressure hPa : 120  
Rack travel in mm: 10.20...10.30  
3rd pressure hPa : 810  
Rack travel in mm: 13.30...13.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 163.0...165.0  
1000 s: (160.0...168.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1055...1065

#### STARTING FUEL DELIVERY

Speed rpm : 100

#### NOS

Del. quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.80...5.10  
Del. quantity cm<sup>3</sup>/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : VOL 12,2 a  
 Edition : 15.08.89  
 Replaces : 31.3.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 827  
 Injection pump  
 Pump designation : PE6P120A32ORS3178  
 EP type number : 0 411 826 752  
 Governor  
 Governor design. : RQV250...950PA657-11  
 Governor no. : 0 421 813 568

Customer-spec. information  
 Customer : VOLVO

Engine : TD122F

1st version kW : 257.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...4.8

Del. quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.4...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 3.60...4.20

3rd speed rpm : 700

travel mm : 6.40...6.60

4th speed rpm : 985

travel mm : 8.20...8.40

5th speed rpm : 1060

travel mm : 9.60...10.00

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 700

Aneroid pressure n: 900

Del. quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 12.00  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 5...13

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 250...380

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.00...13.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.00...10.20  
2nd pressure hPa : 120  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 620  
Rack travel in m: 12.50...12.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 163.0...165.0  
1000 s: (160.0...168.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 980...990

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 220.0...260.0  
1000 s: (216.0...264.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.60...4.80  
Del. quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (14.5...25.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 u  
 Edition : 06.10.89  
 Replaces : 16.12.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 850  
 Injection pump  
 Pump designation : PE6P110A32ORS3197  
 EP type number : 0 411 816 752  
 Governor  
 Governor design. : RQV300...1100PA232-3  
 Govenner no. : 0 421 813 639

Customer-spec. information  
 Customer : VOLVO-MICHIGAN-EUCLI

Engine : TD102

1st version kW : 196.0  
 Rated speed : 1100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

NO8

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 15.5...15.7

100 s : (15.2...16.0)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.40...1.60

2nd speed rpm : 350

travel mm : 1.70...2.30

3rd speed rpm : 700

travel mm : 4.40...5.00

4th speed rpm : 1165

travel mm : 8.70...8.90

5th speed rpm : 1255

travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 155.0...157.0

1000 : (152.0...160.0)



Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 43...51

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.50  
Speed rpm : 300  
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION  
Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.30...11.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 200  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 75  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 140.0...144.0  
1000 s: (138.0...146.0)  
Aneroid pressure h: -  
Speed rpm : 700

Del. quantity cm<sup>3</sup>/ : 127.0...129.0  
1000 s: (124.0...132.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.30  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...190.0  
1000 s: (146.0...194.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

APPLICATION

Loading machine

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 v  
 Edition : 06.10.89  
 Replaces : 12.6.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 851

Injection pump  
 Pump designation : PE6P110A32ORS3080  
 EP type number : 0 411 816 722  
 Governor  
 Governor design. : RQV250...1050PA657-17  
 Governor no. : 0 421 813 653

Customer-spec. information  
 Customer : VOLVO

Engine : TD102FAQ

1st version kW : 221.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0  
 Rack travel in mm : 3.8...4.0  
 Del. quantity cm<sup>3</sup>/ : 1.5...1.9  
 100 s: (1.2...2.1)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 2.20...2.80

3rd speed rpm : 700  
 travel mm : 6.30...6.70

4th speed rpm : 1085  
 travel mm : 7.70...7.90

5th speed rpm : 1170  
 travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1120  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 900  
 Del. quantity : 185.0...187.0  
 1000 : (182.0...190.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1080...1090  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 4...12

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.30  
Speed rpm : 250  
Rack travel in mm : 3.80...4.00

#### CONSTANT REGULATION

Speed rpm : 250...370

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.40  
2nd pressure hPa : 520  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 150  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 136.0...139.0  
1000 s: (133.5...141.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1080...1090

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.80...4.00  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HZU 11,9 a  
 Edition : 15.08.89  
 Replaces : 23.9.88  
 Test oil : ISO-4113

Combination no. : 0 401 846 886

Injection pump  
 Pump designation : PE6P120A32ORS3213  
 EP type number : 0 411 826 779  
 Governor  
 Governor design. : RQV250...1000PA891  
 Governor no. : 0 421 813 704

## Customer-spec. information

Customer : HAEP

Engine : X6130 Z1

1st version kW : 206.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
 -----  
 Rack travel in mm : 11.70...11.80  
 -----  
 Del. quantity cm<sup>3</sup>/ : 18.9...19.1  
 -----  
 100 s : (18.6...19.4)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s : (0.9)  
 -----  
 2nd speed rpm : 250.0  
 Rack travel in mm : 6.6...6.8  
 Del. quantity cm<sup>3</sup>/ : 2.5...3.1  
 100 s : (2.2...3.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.20...1.40  
 2nd speed rpm : 500  
 travel mm : 3.40...3.80  
 3rd speed rpm : 750  
 travel mm : 5.50...5.90  
 4th speed rpm : 1000  
 travel mm : 7.90...8.10

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1025  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h : 700  
 Del. quantity : 189.0...191.0  
 1000 : (186.0...194.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.60...6.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.70...11.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.50  
2nd pressure hPa : 400  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 300  
Rack travel in m: 9.90...10.10

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : 114.0...116.0  
1000 s: (111.0...119.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 s16  
 Edition : 01.09.89  
 Replaces : 28.11.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 896  
 Injection pump  
 Pump designation : PE6P110A320LS3835-2  
 EP type number : 0 411 816 761  
 Governor  
 Governor design. : RQ300/1050PA187-19  
 Governor no. : 0 421 801 428

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 160,0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00x1.50x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.2...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.3...8.6

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.80...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 126.0...128.0

1000 : (122.5...130.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 14.1

Testing:

1st rack travel in: 12.00

Speed rpm : 1090...1100

2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.0

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.70  
Speed rpm : 300  
Rack travel in mm : 6.80...7.20  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 133.0...139.0  
1000 s: (130.0...142.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p  
 Edition : 02.10.89  
 Replaces : 11.5.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 898

Injection pump  
 Pump designation : PE6P110A72ORS3225  
 EP type number : 0 411 816 763  
 Governor  
 Governor design. : RQV250...1200PA910  
 Governor no. : 0 421 813 746

Customer-spec. information  
 Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 12.4...12.6  
 100 s : (12.1...12.8)

Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

2nd speed rpm : 250.0  
 Rack travel in mm : 7.2...7.4  
 Del. quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s : (1.1...2.1)

Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 450  
 travel mm : 2.90...3.30

3rd speed rpm : 800  
 travel mm : 4.70...5.10

4th speed rpm : 1200  
 travel mm : 7.80...8.00

5th speed rpm : 1500  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1245  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000  
 Aneroid pressure h : 1000  
 Del. quantity : 124.0...126.0  
 1000 : (121.5...128.5)

Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version



Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 11.50  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1450  
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack trave: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 280...400

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 360  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 270  
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1240...1250

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.20...5.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p 4  
 Edition : 09.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 898  
 Injection pump  
 Pump designation : PE6P110A720RS3225  
 EP type number : 0 411 816 763  
 Governor  
 Governor design. : RQV275...1200PA910  
 Governor no. : 0 421 813 746

Customer-spec. information  
 Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27  
 Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000  
 -----  
 Rack travel in mm : 12.50...12.60  
 -----  
 Del. quantity cm<sup>3</sup>/ : 12.4...12.6  
 -----  
 100 s : (12.1...12.8)  
 -----  
 Spread cm<sup>3</sup> : 0.4  
 -----  
 100 s : (0.7)  
 -----  
 2nd speed rpm : 275.0  
 Rack travel in mm : 7.2...7.4  
 Del. quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s : (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 2.90...3.30  
 3rd speed rpm : 800  
 travel mm : 4.70...5.10  
 4th speed rpm : 1200  
 travel mm : 7.80...8.00  
 5th speed rpm : 1500  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1235  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h : 1000  
 Del. quantity : 124.0...126.0  
 1000 : (121.5...128.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 11.50  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1450  
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 275  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 280...400

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 360  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 270  
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1240...1250

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.20...5.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p 1  
 Edition : 09.11.89  
 Replaces : 11.5.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 899  
 Injection pump  
 Pump designation : PE6P110A720RS3225  
 EP type number : 0 411 816 763  
 Governor  
 Governor design. : RQ250/1200PA913  
 Governor no. : 0 421 801 477

Customer-spec. information  
 Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 12.4...12.6

100 s: (12.1...12.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.2...7.4

Del. quantity cm<sup>3</sup>/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del. quantity : 124.0...126.0

1000 : (121.5...128.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.50

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1300...1330

4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 1200  
Rack travel in m: 12.70...12.90

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 360  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 270  
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.20...5.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 d  
 Edition : 13.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 900  
 Injection pump  
 Pump designation : PE6P120A32ORS3240  
 EP type number : 0 411 826 786  
 Governor  
 Governor design. : RQV250...1025PA921-16  
 Governor no. : 0 421 813 799

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD122FL

1st version kW : 298.0  
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.60...13.70

Del. quantity cm<sup>3</sup>/ : 25.1...25.3

100 s: (24.8...25.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.5...4.7

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 450  
 travel mm : 3.60...4.20

3rd speed rpm : 800  
 travel mm : 6.30...6.70

4th speed rpm : 1070  
 travel mm : 8.00...8.20

5th speed rpm : 1150  
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200  
Del. quantity : 251.0...253.0  
1000 : (248.0...256.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 5...13

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.10  
Speed rpm : 250  
Rack travel in mm : 4.50...4.70

#### CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.60...13.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 100  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 810  
Rack travel in m: 13.20...13.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700

Del. quantity cm<sup>3</sup>/ : 154.0...156.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 220.0...260.0  
1000 s: (216.0...264.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.50...4.70  
Del. quantity cm<sup>3</sup>/ : 17.5...23.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 d1  
 Edition : 13.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 901  
 Injection pump  
 Pump designation : PE6P120A32ORS3240-1  
 EP type number : 0 411 826 787  
 Governor  
 Governor design. : RQV250...950PA921-17  
 Governor no. : 0 421 813 800

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD122FH

1st version kW : 269.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...4.8

Del. quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 2.20...2.80

3rd speed rpm : 750  
 travel mm : 6.30...6.70

4th speed rpm : 995  
 travel mm : 8.20...8.40

5th speed rpm : 1060  
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900



Del. quantity : 223.0...225.0  
1000 : (220.0...228.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 5...13

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 250...380

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.70...12.80

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 90  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 470  
Rack travel in m: 12.30...12.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 154.0...156.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 220.0...260.0  
1000 s: (216.0...264.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.60...4.80  
Del. quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 y  
 Edition : 06.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 902  
 Injection pump  
 Pump designation : PE6P110A32ORS3080-4  
 EP type number : 0 411 816 766  
 Governor  
 Governor design. : RQV250...1025PA921-18  
 Governor no. : 0 421 813 801  
 Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD102FL

1st version kW : 239.0  
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.7...3.9

Del. quantity cm<sup>3</sup>/ : 1.2...1.6

100 s: (0.9...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 2.20...2.80

3rd speed rpm : 700  
 travel mm : 6.30...6.70

4th speed rpm : 1085  
 travel mm : 7.70...7.90

5th speed rpm : 1170  
 travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 196.0...198.0

1000 : (194.0...200.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

#### Testing:

1st rack travel in: 12.20  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 4...12

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.30  
Speed rpm : 250  
Rack travel in mm : 3.70...3.90

#### CONSTANT REGULATION

Speed rpm : 250...370

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 90  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 680  
Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 134.5...136.5  
1000 s: (131.5...139.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.70...3.90  
Del. quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (9.5...19.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm